THE CHALLENGE OF MEETING THE HEALTH CARE NEEDS OF OLDER ADULTS

A RETROSPECTIVE CHART REVIEW

by

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Abstract

As the older adults of Ontario go through the phases of aging, some might experience functional deficiency and loss of independence in Activities of Daily Living (ADL). With rehabilitation and facilitation of essential health services, older adults will have tremendous opportunities in the pursuit of self-sufficiency and functional independence. The current study focused on detailing a quick-paced rehabilitation program provided to older adults in northeastern Ontario. The program of interest was the Assess-Restore program provided by the St. Joseph's Continuing Care Centre (SJCCC) in Sudbury, Ontario. The study involved a retrospective chart review of 144 patients treated in the past four years, which facilitated the examination of patient charts, as well as the extraction and analysis of their functional status and capabilities prior to admission (PTA) and at discharge. Data were extracted from the Resident Assessment Instrument-Minimum Data Set Version 2.0 (RAI-MDS), which is part of the "PointClickCare" system. Although the study did not find significant changes in the level of functionality and self-sufficiency, it succeeded in effectively promoting functional restoration allowing the majority of patients to return to a level of independence in the community and avert subsequent need for residential care rather than risk further functional deterioration.

Acknowledgement

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CHAPTER 1: INTRODUCTION

Canada's Aging Population

As the proportion of older adults increases, Canada faces significant aging of its population. This trend is expected to continue for the next several decades due mainly to a low replacement fertility rate (i.e., average number of children per woman), an increase in life expectancy, and the aging of the baby boom generation. In 2010, about 53% of older adults were between the ages of 65 and 74, 33% were between age 75 and 84 and 13% were 85 and older (Statistics Canada, 2010). This latter group accounted for 2% of the total population of Canada in 2011 in which an estimated 5.0 million Canadians were at least 65 years of age and is expected to reach 10 million in the next 25 years. Between 2011 and 2031, all members of the baby boom generation (Canada's largest birth cohort, born between 1946 and 1965) will have reached age 65 (Statistics Canada, 2011). In 2031, those aged 85 or older will account for a similar proportion of all older adults but 3% of the total population of Canada (Statistics Canada, 2011). The current life expectancy in Canada is 81.38 years and it has been rising since 1971. It will continue to rise and exceed 80 and 85 years for males and females respectively (Statistics Canada, 2011). In 2010, women accounted for 52% of older adults age 65 to 74 and 60% of age 75 and older, but this gender split will adjust as the age gap in life expectancy narrows for men and women (Canadian Institute for Health Information, 2011).

The growth in the share and numbers of older adults will accelerate over the 2011 – 2031 period (Ministry of Finance, 2011). Figure 1 illustrates the percentage of older adults in Sudbury, Ontario, and Canada. In rural and northern Ontario, older adults comprise a greater percentage of the general population consisting of communities faced

with socio-demographic and economic challenges (Kulig & Williams, 2012). Such challenges include the aging of the rural population, the tendency for retirees to move to rural areas, and the migration of youths to urban areas for education and employment opportunities (Ministerial Advisory Council on Rural Health, 2002). Between 1996 and 2006, the City of Greater Sudbury, which is located in northeastern Ontario, reported a declining youth population but a significantly higher and growing proportion of older adults (Social Planning Council of Sudbury, 2009).

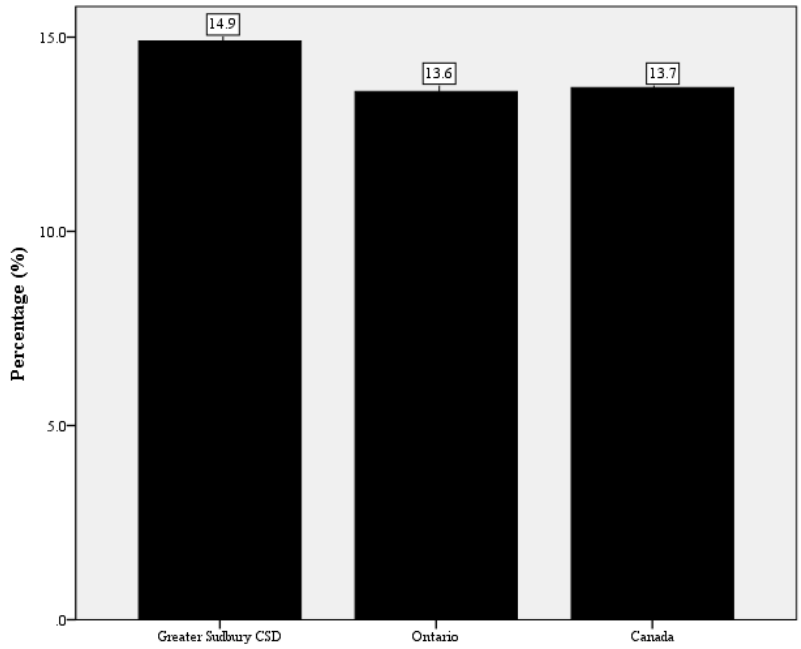


Figure 1. Older Adults - Percentage of 2006 Population; Statistics Canada, 2006

The ratio of male to female older adults (over age 65) in The City of Greater Sudbury, the site of the current study, is identical to that of Ontario and Canada—about 10 men to every 13 women. The Ontario Ministry of Finance (2011) recently projected that by 2031, older adults in Sudbury will represent 25.6% of the population of Sudbury (40,727:158,880). Given the higher proportion of older adults in Greater Sudbury and the expected increase in the proportion of older adults to the younger population,

consideration has to be given to the general quality of life and the availability of healthcare in the area.

Policy Context

***Alternate Level of Care Emergence*.** One of the most challenging health issues faced by communities in northeastern Ontario is the availability of long-term care services as adults move through the latter part of their life course. People are living longer and as such, there will be an increasing need to help and support older adults with quality services that they can depend upon. The lack of services irreversibly diminishes quality of life, resulting in an increased risk of subsequent illness or death and is associated with prolonged hospital stay and higher rates of institutionalization (Braes, 2009). Cases of prolonged hospitalization produce a ripple effect throughout the healthcare system; beds are temporarily occupied, which delays new hospital admissions and increases emergency department wait times (Dawson, Webster & Weerasooriya, 2008).

Alternate levels of care (ALC) patients are patients who have finished the acute care phase of their treatment but remain in the acute care bed waiting for the availability of the appropriate level of care to meet their needs. Clients are designated as ALC when they require further treatment and intervention to complete their care, but are assessed as no longer needing to be in an acute care hospital (The Council on Aging of Ottawa, 2011). The ALC period starts at the time of designation and ends at the time of discharge to an alternate destination (or when the patient's needs or condition changes and the designation of ALC no longer applies) (Cancer Care Ontario, 2009). Most ALC patients are over the age of 75, in a demographic that on estimate, will grow by 32 % over the

next 10 years (Walker, 2011). Without the creation of intervention programs or health services, this growth could place unsustainable demands on current policies and models, which may result in prolonged hospital stays while patients wait for residential placements (Walker, 2011).

In July 2010, there were 4,546 ALC patients in acute and post-acute care hospitals in Ontario (and this number remained relatively unchanged every month throughout 2010 and the first quarter of 2011), while 47% waited for more than 40 days for alternate levels of care (Walker, 2011). Of these long-stay patients, 943 were in acute care hospitals, and included 95 patients who had been admitted for more than 318 days; 1,187 were in post-acute care hospitals with 120 of them in hospital for more than 550 days. The preceding information indicates that the existing system and policy frameworks are not efficient in addressing current and quite possibly future ALC population needs, particularly for complex older adult patients who make up much of the ALC population. The lack of appropriate community care, including long-term care, home care, and support services, contributes to this system-wide issue preventing Ontarians from getting the right care at the right time and in the right setting (The Change Foundation, 2011). This situation illustrates not only a systemic problem but also puts the older patients at unnecessary risk of secondary effects associated with prolonged hospitalization, as almost 30% of older patients develop functional decline, while being hospitalized (Costa & Hirdes, 2010; Braes, 2009).

Although differences in funding and system capacity and integration may account for the variation in ALC rates, Saskatchewan and Prince Edward Island had the lowest ALC rate (see Figure 2) at two percent in 2007-2008 while Ontario and Newfoundland

experienced the highest ALC rate at seven percent (Canadian Institute for Health Information, 2009). Ultimately, each day that is allocated to a person on alternate care represents a day of acute care that is not available to another patient who requires hospital care.

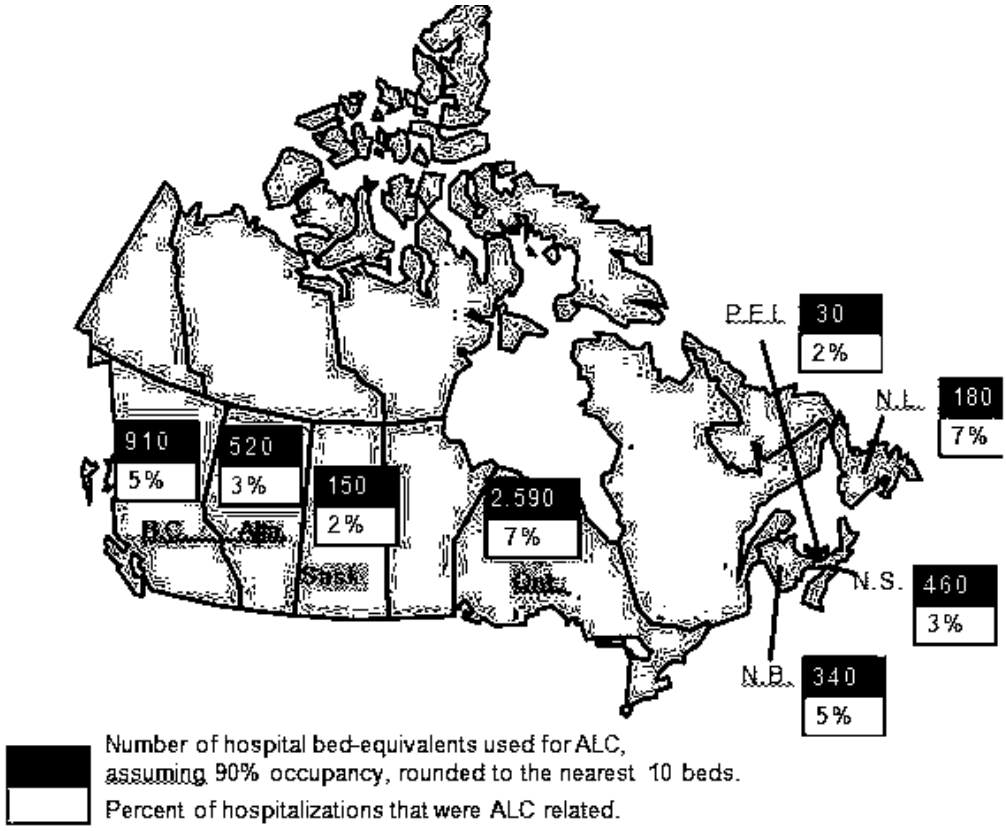


Figure 2. Scope of Alternate Level of Care by Province, 2007-2008; Canadian Institute for Health Information, 2009

Provincial Initiatives. As the population of Ontario increases and as the life expectancy rises, there will be a significant need for services to sustain the quality of living and facilitating healthy independence. In rural and northern Ontario, older adults form a greater portion of the population who at retirement age will most likely seek greater health and accessibility requirements (Sinha, 2012). As in all of Ontario, rural and northern municipalities support residents and older adults who are in need of long-

term care. Under provincial regulations, municipalities are required to provide a long-term care facility in their jurisdictions either directly or jointly with another municipality (Ontario Association of Community Care Access Centres, 2008). Government intervention programs such as the 'Aging At Home Strategy', 'Aging in Place', and 'Home First Program' relieve strain in acute care settings. There is awareness that differing levels of care, different kinds of services, and various ways of providing services and care are required. Such programs capture and focus on services and supports in general, and in particular, opportunities for individuals who choose to live in their own place and community.

The province's fourteen Local Health Integration Networks (LHINs) are dedicated to provide and tailor a range of support services to meet the needs of older adults so that they may live independently in their own homes. These services could include enhanced home care and community support services like meals, transportation, homemaking services, caregiver supports as well as increased access to mobility aids. These community services may provide older adults support to lead healthy and independent lives at home rather than in acute care, rehabilitation or long-term care facilities.

As reported by the Rural Ontario Municpal Association, (2011), there are 643 long-term care homes with approximately 77, 000 beds in Ontario, of which 6,600 beds are located in northwest and northeastern Ontario. Wait times for long-term care beds are an average of 105 days for someone in hospital and 173 days for those waiting while at home (Rural Ontario Municpal Association, 2011). The current wait list for a long-term care bed in Ontario is 25,000 persons, an increase of 5.1% over 2010 (Rural Ontario

Municpal Association, 2011). By 2050, it is estimated that 1.3 million Canadians will be over 85 (Rural Ontario Municpal Association, 2011). This growth could place unsustainable demands on managing policies and health care models. With an older and less healthy population in northeastern Ontario, older adults face a greater disadvantage in receiving community based health support services. Northeastern Ontario experiences a higher incidence of cancer, heart disease, stroke, and debilitating diseases such as degenerative bone disease (Health Science North, 2006). The challenges of providing care to older adults intensify where those residing in this region are in poorer overall health.

Considering northeastern Ontario regional challenges, the North East Local Health Integration Network (NE-LHIN) has created a task force on behalf of the Ministry of Health and Long-Term Care (MOHLTC), which might help to mitigate the ALC issue. Together, MOHLTC and NE-LHIN realized that because the long-term solutions to this problem rely on the resources and services of the healthcare continuum of care, a complete integration of the healthcare system would provide the most effective solution to the ALC situation. The task forces formed in March 2007 in the North Bay, Sault Ste. Marie, Sudbury, and Timmins area spent seven months on the mandate to conduct detailed analysis of the ALC issue in each region. Their anticipated outcome was that with this new initiative, there would be a 25 % reduction of ALC cases year after year for the next three years (North East Local Health Integration Network, 2011).

Age and Change

Health and Normal Aging. Healthy aging is an issue of increasing importance and as the size of the older population continues to grow, poor health in later life

compounds. The World Health Organization (2007) defines health as a state of complete physical, mental, and social well-being, not merely the absence of disease, or the ability of an organism to adapt to its environment and circumstances. At different stages of life, good health is referred to as the achievement of a dynamic balance between individuals or groups and their environment (Dishman, Sallis, & Orenstein, 1985), or poor health experiences that come from a variety of acquired or prevailing circumstances or conditions. Nevertheless, the operational definition of health requires an examination of the social determinants of health, which falls under one large umbrella called socioeconomic status (SES). Often associated with health disparities in Canada, SES is a major determinant of health disparities and the overall health of a population (Hearne, Parker & Patterson 2000). Socioeconomic status of persons includes their income, education, diet, and social capital. These variables are interconnected and affect the life course trajectory. Where an individual is predisposed to unhealthy environments and living conditions, the provision of timely and proper community care and services will improve the SES and will prevent negative outcomes (Hertzman & Power, 2003). For example, a low level of education might result in a lower income level, a lower standard of living, and lesser chances to afford the necessities for a healthy life.

There are different interpretations and meanings of health to different people. Herzlich (1973) provides a framework for understanding the links between way of life and the individual in lay concepts of health. The individual's nature, heredity, temperament, or predisposition might make the individual vulnerable, but the way of life remains crucial to the development of poor health. To expand Herzlich's concept, a study by Blaxter (1997) explored the variation in meaning of heath across different age

and social groups. This study shows that health is not a single or unitary concept, but one that has a number of dimensions as applied to different areas of life and lifestyles. Accordingly, if health is a combination of the preceding dimensions of life, it implicates a continuum, where the state of health is dynamic, and constantly changing. Throughout a person's life, there are experiences of well-being and of sickness. As a result, health is a continuously changing process, a continuum, where one aspect of breakdown may affect another aspect of their life.

Health and wellness are multidimensional and incorporate the different dimensions of a person's life such as social, physical, emotional, cultural, and environmental. With any type of focus on the application of holistic health, comes a sense of appreciation in understanding that there exists a constant interaction between the preceding dimensions. In the past, proper health meant the absence of illness and disease but today physicians, clinicians, and researchers explain health holistically not only in physical terms but in social, cultural, and psychological terms. The biopsychosocial model proposed by George Engel (1977) is widely accepted as a fundamental precept of general practice including many other disciplines involved in health and social care. It takes the broadest possible view of illness and disease (both internal and external). The model is mostly concerned with taking into account the individual's mind, emotion and spiritual life. Holistic health combines the best of modern scientific diagnosis as well as innovative health promotion methods.

Aging is not a standard but a heterogeneous process with some degree of complexity. Everyone ages differently and the rate of change can vary noticeably in individuals and from one individual to the next. The changes aging individuals

experience are not necessarily harmful. With age, hair thins and turns gray; skin thins, becomes less elastic, and sags (Croswell, 2007). There is a slowing down of functions, which continues throughout adulthood with the onset of reduced function of bodily organs. In the gastrointestinal system, for example, production of digestive enzymes diminishes, reducing the body's ability to break down and absorb the nutrition from food (Croswell, 2007).

Healthy aging is an issue of increasing importance and as the size of the older population continues to grow, greater consideration needs to be given to those who may live their life in poor health. Much of the illnesses and disabilities associated with aging relate to modifiable lifestyle factors that are present in middle age (Eliopoulos, 2010). Many human abilities peak before age 30, while some abilities continue to grow through life (Eliopoulos, 2010). The 'compression of morbidity' theory alludes to an individual being free of diseases and illnesses for a long period (Block, Hubert, Fries & Oehlert, 2002). Only at a very old age would people develop several diseases and illnesses at the same time, so that the time of sickness would be very short and therefore older adults will experience minimal suffering from chronic diseases before their time of death. The great majority of those over age 65 today are healthy, happy, and fully independent (Croswell, 2007), but will eventually experience some deterioration or decline. The challenging obligations are to reduce stereotypes and accept older adults as unique in their resources, contributions, and opportunities.

Physical and Biological Changes. The primary health concerns in later life are chronic conditions, disability, and dependency (Eliopoulos, 2010). Throughout the aging process, there is significant concern about diseases that cause morbidity and mortality

and how they affect functional dependence. A number of known physiological changes occur with aging, including reduced muscle strength, aerobic capacity, and reduced bone density (Creditor, 1993). Co-morbid conditions and chronic illness may heighten these changes. Although some of the common changes that are attributes of aging are a result of the onset of diseases, most of the normal changes of aging have no impact on normal functioning, although they become apparent when the body is placed under stress (e.g., acute illness, physical exertion) (Bottomley, 2010). It is important to be able to recognize the changes of normal aging versus the effects of disease. An illustration of this cause and effect scenario is evident in the development of Alzheimer's disease whereby the transmission of messages in the nervous system slows down, resulting in slower cognitive reflexes (Bottomley, 2010). Although Alzheimer's disease may affect memory and abstract thinking of an individual, it is not reflective of normal age related changes. Untreated disease can reduce the quality of life of individuals, developing a cascade of health problems that can lead to rapid declines in health and function. A physically fit fifty-year old can have the functional capacity of a thirty-year old while someone who smokes and is sedentary may function as if they were several decades older. Thus, biological age can be very different from chronological age.

Functional decline—the inability to perform usual activities of daily living due to weakness, reduced muscle strength, and reduced exercise capacity—occurs due to deconditioning and acute illness during hospitalization (Fletcher, Jennings & Kleinpell, 2008). Muscle mass and muscle strength decline with aging, which may reflect the progressive loss of reserve capacity associated with reduction of physical activity and dependency especially after a few days of bed rest (Bradley, Fried, Tinetti &Williams,

2001; Brayne, Hebert, & Spiegelhalter, 1999). As a result, older adults are less able to respond to physical demands.

Activities of Daily Living (ADL). The essential outcome in the caring for older adults is maintaining the ability to perform basic self-care activities without assistance. Functional status refers to the tasks and activities a person can perform in daily life (Bradley et al., 2001), and references to these tasks generally denote activities of daily living or ADL. The self-care tasks (for example, bathing, eating, dressing, and transferring in and out of a bed or chair) are especially important, because these are the basic ADLs that, in general, are essential for independent living and are fundamental to maintaining independence and quality of life. Loss of independence in these activities is strongly associated with institutionalization, caregiver burden, higher resource use, and death (Burant, Counsell, Covinsky, Fortinsky, Landefeld, Kresevic & Palmer, 2003).

A person's score on assessment tools for ADLs could determine whether he/she must move from home care services or assisted living to a long-term care facility. Sometimes the changes come on slowly, as with normal aging or with the onset and progression of a dementia-related disease or a cognitive deficiency. For others, the problems with performing ADLs may be the result of a sudden change in health that accompanies a stroke or a fall. In most cases, some older adults regain their abilities to perform ADLs with rehabilitation therapy.

Physical activity is one of the cornerstones of adult health. Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure (World Health Organization, 2007). Loss of mobility represents a critical stage in the disablement process, whereby the risk for disability is significantly increased

(Skinner & Stearns, 1999). Given the demographic reality of global population aging, it is important to investigate modifiable factors that might help preserve mobility in later life. Mobility, classified as one of nine domains of 'activity and participation', is the ability to move physically. Mobility is defined as the aspect of moving by changing body position or location or by transferring from one place to another, by carrying moving or manipulating objects, and by using various forms of transportation (World Health Organization, 2007). Mobility influences a myriad of aspects of everyday functioning from performing activities of daily living to facilitating social interaction. Immobility is a common occurrence among hospitalized older adults and may contribute to multiple, long-lasting adverse physiologic and functional outcomes.

According to a substantial body of scientific evidence, regular physical activity can bring significant health benefits to people of all ages and abilities (France, 2009). Contrary to popular belief, physical activity is beneficial irrespective of age, and the need for physical activity does not end in later life. Research increasingly indicates that physical activity can extend years of active independent living, reduce disability and improve the quality of life for older persons as well (Public Health Agency of Canada, 2002).

Rather than a sedentary lifestyle, staying physically active is critical in preventing or delaying the onset of chronic diseases of aging, and in reducing the period of disability and dependent living (Patterson & Warburton, 2010). Research shows that physical activity may prevent or reduce several problems associated with aging, thus avoiding functional loss and disability (Piedras-Jorge, Melendez-Moral, Tomas-Miguel, 2010). A large proportion of older adults do not engage in sufficient levels of physical activity to

maintain or promote their health. In the Canada Physical Activity Guide to Healthy Active Living for Older Adults (Health Canada, 2002), it is reported that 60% of older adults are not sufficiently active to achieve optimal full health benefits. According to the National Population Health Survey (NPHS) data, 14% of older adults were sufficiently active, 21% were moderately active, and 65% were inactive (Health Canada, 2002). Inactivity levels increase from 59% for ages 55 to 64, 60% for ages 65 to 74, and 74% for ages over 75 (Health Canada, 2002). Due to these physical inactivity levels, older adults are susceptible to sedentary lifestyle and are therefore vulnerable to chronic illnesses or disabilities.

There exists a large and growing body of physical inactivity studies on aging, which demonstrate the impact on a range of chronic diseases and conditions associated with aging (King & King, 2010). According to King & King (2010), increased regular physical activity (to even a modest degree) can positively affect health, daily function, and quality of life. The preceding calls for a paradigm shift in transforming the ways in which researchers, policy makers, and practitioners have approached physical inactivity.

Moderate and high levels of physical activity appear to afford some degree of protection against other independent risk factors. Chronic diseases are currently one of the major causes of death and disability worldwide. Non-communicable conditions, including cardiovascular diseases (CVD), diabetes, obesity, cancer, and respiratory diseases, account for 59% of the 57 million deaths annually and 46% of the global burden of disease (World Health Organization, 2007).

Physical inactivity is becoming a critical public health issue for Canadians. The global estimate for the prevalence of physical inactivity among adults is 17%, which will

cause approximately, 1.9 million deaths worldwide annually (CAAWS, 2007). Physical inactivity accounts for about 6% of Canada's healthcare costs, amounting to $5.3 billion of direct and indirect costs, with obesity contributing to approximately $4.3 billion (CAAWS, 2007). Physical activity is one of the most cost-effective ways to achieve the objective of having a healthier population, physically and mentally. Physical activity also has economic benefits in terms of reducing healthcare costs, increasing productivity, and results in healthier physical and social environments (CAAWS, 2007). Older adults in Canada will benefit tremendously where there is adequate sustainability in physical activity and psychological health that will reduce the risk of chronic diseases, immobility, and functional decline.

Hospitalization and Discharge Planning. The consequences of individual interactions between the effects of normal aging and hospitalization likely produce added levels of disability in the cascade toward dysfunction and the final common pathway to dependency (Zisberg et al., 2011). Physical and cognitive decline occurs with prolonged hospital stay, which contributes to dependency. A high percentage of hospitalized older persons discharged to long-term care never return to their homes or community (Creditor, 1993). In a study by Kemper and Murdaugh (1991), 55% of persons over age 65 who entered long-term care remained there for more than a year. Those placed in long-term care facilities did not require those services but at the time, such a facility was the only suitable alternative. Even if the intent is for a temporary stay until rehabilitation occurs or arrangements for home care are confirmed, circumstances frequently dictate otherwise (Creditor, 1993). One aspect that is often overlooked is the lack of resources that some

long-term care facilities may encounter which affect effective rehabilitation of their patients to their pre-hospitalization functional levels.

The negative effects of hospitalization begin immediately and they progress rapidly. Hirsch and colleagues (1990) have shown that functional decline occurs by the second day of hospitalization and tends to improve slightly after discharge. Loss of functional independence during hospitalization resulted from not only the effects of acute illness, but also from the inability to maintain functionality during hospitalization. In a study by Fletcher, Jennings & Kleinpell (2008), the hazards of bed rest during hospitalization included immobility, accelerated bone loss, malnutrition, delirium, and isolation. During hospitalization, older patients often experience reduced mobility and activity levels due to several physiologic changes that occur, including reductions in cardiac output and oxygen uptake (Hiris, Mor, Rakowski, & Wilcox, 1994). Functional decline, including changes in physical status and mobility, continue to prevail as the leading complication of hospitalization for older adults (Kleinpell et al., 2008). In figure 3, the pathway describes the patients' hospital trajectory, which illustrates their baseline pre-hospitalization, admission, and hospitalization and finally discharge characteristic. The result of the patients' trajectory and level of physical functioning is often predicted by the patients' baseline level of functioning.

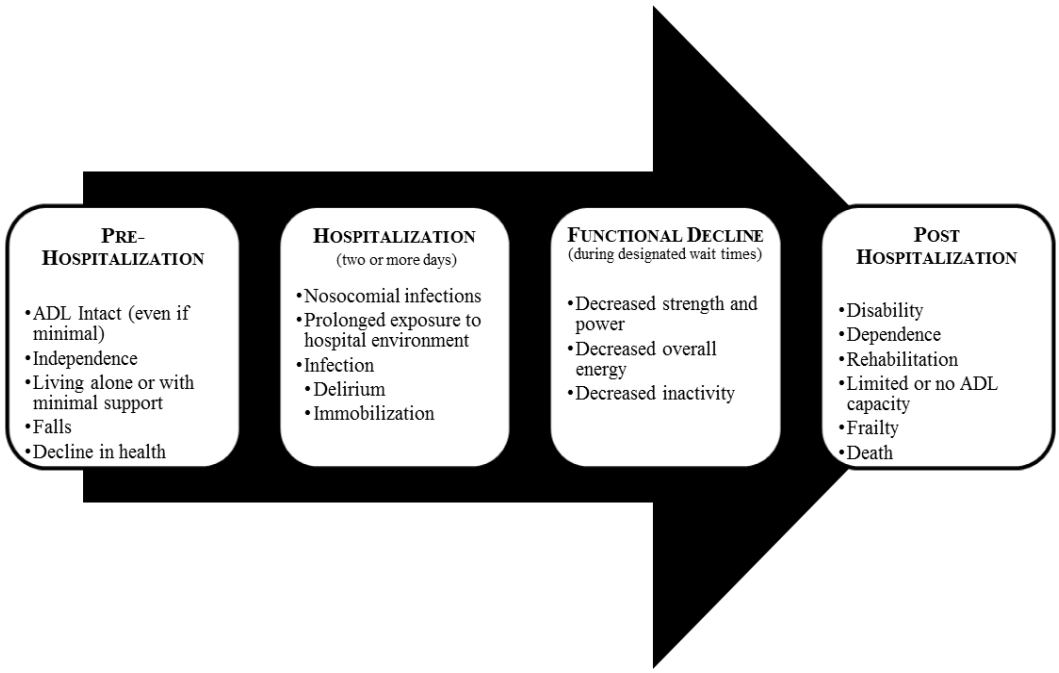


Figure 3. Functional Decline Pathway.

Older patients sometimes encounter a single destabilizing incident, which complicates other health challenges. Such an event, whether it is a fracture from a fall, a minor stroke, or even caregiver exhaustion, often results in emergency care or hospital admission. As older adults wait in acute care beds for an appropriate placement, de-conditioning occurs, sometimes to an irreversible degree, where they then require permanent support. Compounding the situation is the patient's unfamiliarity with the hospital environment, and the urgency of the decision-making process, which then leads to a premature determination for permanent placement in a long-term healthcare facility.

Previous studies evaluating outcomes of hospitalization of older adults suggest that those who are more frail and disabled prior to hospitalization are at higher risk of adverse outcomes in comparison to their more robust and highly functioning counterparts (Burant et al, 2003). However, these studies have predominantly involved the

identification of high-risk patients according to their pre-admission place of residence, rather than the recognition of the causes for vulnerability.

Hospitalization of older adults usually marks the transition from independent living to institutional care. Weiss (2006) stated that hospital discharge purports to a transitional process occurring in three sequential phases:

a) Hospitalization phase during which discharge preparation occurs
b) Discharge when short-term outcomes of the preparatory process are measurable
c) The post-discharge period of the patients' perceptions of their ability to cope with the demands of care at home, and meeting their needs for support and assistance

Patients face a variety of possible options for discharge, which are dependent on the overall level of care required them to live as independently as possible. Some of these options are home with support care, home without support care, in-patient acute care, long-term care, retirement home, rehabilitation facility, residential care services, and home care services. Early identification and assessment of the patients' needs provides timely discharge planning that result in continuity of care and efficient use of hospital and community resources. The process of discharge planning includes identification, assessment, goal setting, planning, implementation, coordination, and evaluation (The Association of Discharge Coordinators of Ontario, 1997). Effective discharge plans help reduce re-admission rates by ensuring adequate and effective post-discharge care. In the study by Naylor (1999), older adult patients hospitalized for several medical problems were tracked for six months, and the researchers found that 37% of patients with

unplanned care were re-admitted, compared to 20% of patients with comprehensive discharge planning. In addition, innovative discharge plans might reduce a patient's length of stay. A Canadian study in Newfoundland found significant reductions in the length of stay, whereby patients in acute care hospitals could be discharged up to one day earlier when they had access to enhanced discharge planning (Parfrey, 1994).

Falls – Background and Impact

Falls represent a substantial health problem among the older adult population. A fall is often defined as a sudden and unintentional change in position resulting in an individual landing at a lower level such as on an object, the floor, or the ground, with or without injury (Public Health Agency of Canada, 2005). One in three persons over the age of 65 is likely to fall at least once each year (Kendall, Peck & Scott, 2004). With the number of older adults in Canada projected to increase from 4.2 million to approximately 10 million between 2005 and 2036 (Human Resources and Skills Development Canada, 2010), the estimated number of older adults who will fall at least once in 2036 will increase to 3.3 million (Elliott, Scott &Wagar, 2010).

Falls are the leading cause of injury-related hospitalization amongst older adults (Public Health Agency of Canada, 2005). While the percentage of those who incur minor injuries because of a fall is about 50 %, those with serious injuries, like fracture and sprain, ranges between 5 and 25 % (Gallagher, Herman, & Scott, 2006). Moreover, falls are the cause of most fractures among older adults and 20% die within a year of incurring a fracture (Public Health Agency of Canada, 2002). In addition, the psychological impact of a fall may result in a post-fall syndrome that includes dependence on others for daily activities, loss of autonomy, confusion, immobilization, and depression (World Health

Organization, 2008). Some of the conditions that can lead to a fall include muscle weakness, vision problems, and side effects from medications (Public Health Agency of Canada, 2005).

The risk factors for a fall are numerous and multi-faceted, interacting with one another coactively at the biological, medical, behavioural, environmental and socioeconomic levels. Some risk factors directly relate to the health of the individual while others directly relate to the environment (Kendall, Peck & Scott, 2004). Biological and medical risk factors can include age, the presence of chronic or acute disease (e.g., heart disease, osteoporosis, and diabetes), physical disability, muscle weakness, and poor physical fitness levels. Behavioural risk factors typically include risky habits, use of multiple medications (such as antipsychotics) and inadequate diet and exercise. Food security issues for at-risk older adults can affect nutritional status and subsequently increase susceptibility to an injurious fall (e.g., through dizziness). Environmental and organizational risk factors exist within individual surroundings, and usually include hazardous and improperly placed furnishings. Almost half of all falls involving older adults occur in home bathrooms and on the stairs (Health Canada, 2006).

Older adults who experience an injurious fall in Canada are more likely to be female. Women typically sustain more falls that are injurious and have higher rates of fall-related hospitalizations. Compared to men, women are at greater risk of breaking a bone because of a fall, due, in part, to lower bone density after menopause and higher rates of osteoporosis. For those age 65 and over, women had a rate of hospitalization of about 16:1000 and men of 9:1000 (Pearce, Pengelly & Scott, 2005). The findings are

consistent with other studies that show a strong correlation between female gender, older age, and the risk of injurious falls (Public Health Agency of Canada, 2005).

Medications in general and psychotropic drugs in particular contribute to the increase in the risk of falls (Tinetti, 2003). The possible mechanisms whereby psychotropic drugs increase this risk include sedation, orthostatic hypotension, arrhythmias, confusion due to anticholinergic effects, and dopaminergic effects on balance and motor control (Lui, 2003). There are three psychotropic drug classes for older adults: benzodiazepines and related drugs, antidepressants, and antipsychotics that have been associated with an increased risk of falls, particularly when used by older adults. Although much of the literature regarding the use of psychotropic medications among older adults is focused on their use in long term care settings and in residents with dementia, psychotropic medication is common among older adults with or without dementia in all settings (community, assisted living, rehabilitation, acute care medical and psychiatric units, and long term care facilities) (Lindsey, 2009). Psychotropic medications are more prevalent among community-dwelling older adults than other age groups. For example, community-dwelling older adults are 7 to 18 times more likely to use psychotropic drugs than are middle-aged adults (Martin &Voyer, 2003). Antipsychotics predispose to falls due to sedation, psychomotor slowing, and for some, orthostatic hypotension or a dizzy spell. Antipsychotics are common among institutionalized older adults, which provide a prelude to the effect of this class of drug and fall risk in the community.

Unintentional injuries among older adults account for a significant burden in both human and economic terms. It is estimated that fall-related injuries in Canada among

those 65 and older cost the economy $2.8 billion a year (Kendall, Peck & Scott, 2004). The Public Health Agency of Canada (2005) estimates that a reduction in falls by 20 % could result in 7,500 fewer hospitalizations and 1,800 fewer permanently disabled older adults, as well as national savings of $138 million annually. In 2004, adults aged 65 years and older accounted for about 13% of our population, and direct healthcare costs for fall-related injuries were $2.0 billion (SmartRisk, 2010). By 2031, the projected total of older adults will represent 24% of Canada's entire population and approximately $4.4 billion will be spent on direct healthcare costs for fall-related injuries among this age population (SmartRisk, 2010). Rehabilitation and recovery periods for injurious falls are twice as long in comparison to other causes, and without necessary precautions, this could very well result in high resource burden on the healthcare system (British Columbia Ministry of Health, 2005). The impact of falls among older persons in the Canadian healthcare system is a cause for concern at individual and governmental levels (Elliott, Scott &Wagar, 2010) as this would affect the patients' coninuum of care.

CHAPTER 2: MEETING THE HEALTHCARE NEEDS OF OLDER ADULTS

Continuity of Care

Many older adults in Canada require much more continuous series of support to comfortably and successfully age in their places of choice. Therefore, it is essential to develop innovative solutions that will provide the highest quality of life to everyone. There is a need to move toward a system of care that would deliver the right services at the right time, which is essential in providing optimum care. The individual components along this continuum of care require strengthening, including, housing, residential care, home care services and palliative care (Canadian Institute for Health Information, 2009).

In order to maintain a healthcare system that is comprehensive, universal, and accessible, changes within the healthcare system are required. Continuum of care is a concept involving an integrated system of care that guides and tracks patients over time through a comprehensive array of health services spanning all modes of intensity of care (Evashwick, 1989). The Canadian healthcare system has continuously tried to ensure it meets all necessary needs of the patient with a high degree of satisfaction, distribution, and timeliness. Of great importance to current health care system is the incorporation of interdisciplinary teams of healthcare providers who offer a continuum and undisrupted flow of coordinated and comprehensive set of services accessible to everyone. The relationships amongst health professionals must reflect the importance of interdisciplinary care and the implementation of shared objectives**.** Just as continuity of care can play an important role in patient satisfaction, lack of consistency in care provided during a patient's stay can cause potential problems to the quality of care made available to patients.

There exists a lack of support from healthcare team members at some institutions regarding the discharge of patients from hospital due to risk-related concerns (Bates, Forster, Gandhi, Murff, & Peterson, 2003; Denham, Greenwald, & Jack, 2007). Hospital staff and Community Care Access Centre (CCAC) workers may have the impression that supportive housing, convalescent care, attendant care and other transitional programs are not available and have long waitlists and as a result are not considered (Ministry of Health and Long Term Care, 2010). There is generally limited knowledge related to what resources and programs are available, resulting in a default to long-term care as the primary option for most patients. Most importantly, relationships among physicians, nurses, and other health professionals need to reflect the interdisciplinary care required by older adults, even on acute care units. Mutual objectives require expression beyond the simple writing of an order by a physician, and just as an attending physician is responsible for the patient, so too are all other professionals (Creditor, 1993).

Growing old is not an event but rather, a process of gains and losses. A noticeable challenge, especially as older adults begin to live with an increased number of complex health conditions, is in the area of care transitions and continuity between the providers of health care services across different settings. Transitions in care occur when patients move between different levels of care, different providers, and different settings. The expectation is that care providers meet the distinct needs of older adults while respecting their desire to live independently in their communities for as long as possible. In the effort to optimize desired functional autonomy, smooth navigation of the multiple transitions between different types of care settings can be challenging. Transitions

become complicated when patients have complex conditions that can include multiple conditions, complex medical regimens, and/or limited self-management abilities.

Most transitions experienced by older adults have inherent links to their health. Meleis' theory of transition functions as a framework for conceptualizing the discharge transition of the relevant variations as well as concepts of the specific transitions involved with post-discharge from hospitalization (Meleis & Chick, 1986). In this context, transition refers to the process of passage from one life phase, condition, or status to another during which changes in health status, role relations, expectations, or abilities create a period of vulnerability. People undergoing transition may not know what to expect and their expectations may not be realistic. Some may show apprehensiveness to changes because they are unaccustomed to the new surroundings or fear unexpected changes and demands. Others may lack the skills in understanding the changes and the knowledge of accessing available resources and services.

The implementation of strategies to decrease the demand on hospital staff and the provision of safe, comprehensive, and continuous quality care in the community require a major transformation of the healthcare system, especially the community and primary care sectors (Ontario College of Family Physicians, 2008). Hospitals cannot undertake the work alone nor can the community and primary care sectors.

Assess-Restore Unit (ARU)

Understanding the health status of older adults in Canada is the basis for making informed decisions about how best to meet the healthcare needs of older adults. In many ways, older adults' health statuses determine their service needs. Moreover, changes in

the collective health status of older adults at the population level can point to emerging areas of need.

The persistent system-level problem will intensify whenever there is a growing population of older adults. Individual programs and strategies have not proved to be adequate in supporting all dimensions of the aging population. The challenge of promoting older adults' independence and engagement is difficult, especially in the face of escalating health care costs, limited allocation of resources and more importantly, the lack of sufficient community support. Due to the current shift in the older adult population, some older adults may end up in long-term care facilities when they could otherwise have more years of independent or assisted living in the community. However, promoting independence is not a matter of rehabilitating older adults to their pre-morbid state. The reality is that no matter how minimal the functional improvement in ADL, it contributes to a positive change in the health status and quality of life. Hence, facilities involved in intervention programs for older adults are encouraged to continue such services.

As the population ages, older adults will inevitably face hospitalization and will require follow-up care when discharged from hospital to supplement their medical condition. Even when the necessary resources are available gaps in care and poor communication between service providers, patients and family members during critical and sensitive periods in transitions are areas of concern. Common and costly consequences of poor care transitions include the duplication of services and re-admission to hospitals or long-term care (LTC). These are preventable with in-place comprehensive outpatient or community care (Hiris, Mor, Rakowski & Wilcox, 1994),

Through support of the government's key priorities in reducing wait times and alleviating ALC issues, the assess-restore unit (ARU) program, as part of the Aging at Home Strategy initiative in Ontario provides patients discharged from acute care services with an alternate but appropriate type of care (Local Health Integrated Network, 2011). Overall, the ARU program provides a setting for patients to regain strength and functioning, which will enable them to return home. MOHLTC and LHIN have found that providing a period of assessment and restoration/rehabilitation, preferably in a post-acute care environment, allows for a more meaningful determination of the patient's needs for sustainable recovery when they return home.

MOHLTC and LHIN have suggested preliminary concepts and relationships for a provincial Assess and Restore approach (see Figure 4). In this approach, entry into Assess and Restore begins in age-friendly communities and hospitals with at-risk screening tools that are used by caregivers in a range of residential settings. Such screening tools facilitate the identification and classification of the level of functional independence in preparation for community based preventative exercise, activation, and falls prevention services. A person identified as at-risk is referred to his or her CCAC, which, in coordination with the primary care provider, takes responsibility to assess the care needs of the patient. Following this assessment, he or she is navigated to the appropriate care setting that would be able to address the required restorative health care needs of the patient. Strategies to optimize the elderly patient's outcome from hospitalization begin with a structured but brief geriatric assessment to identify the patient's baseline (prior to the acute illness leading to hospital admission) and current functional status. The patient's functional status at the time of the anticipated discharge is

estimated and becomes the ultimate functional goal. This assessment is most often completed in collaboration with nurses and other health professionals involved in the patient's hospital care. Once the patient has achieved the functional goals, and is ready to return to the community, the CCAC, working with the primary care provider, would arrange for the appropriate continuing and transitional services.

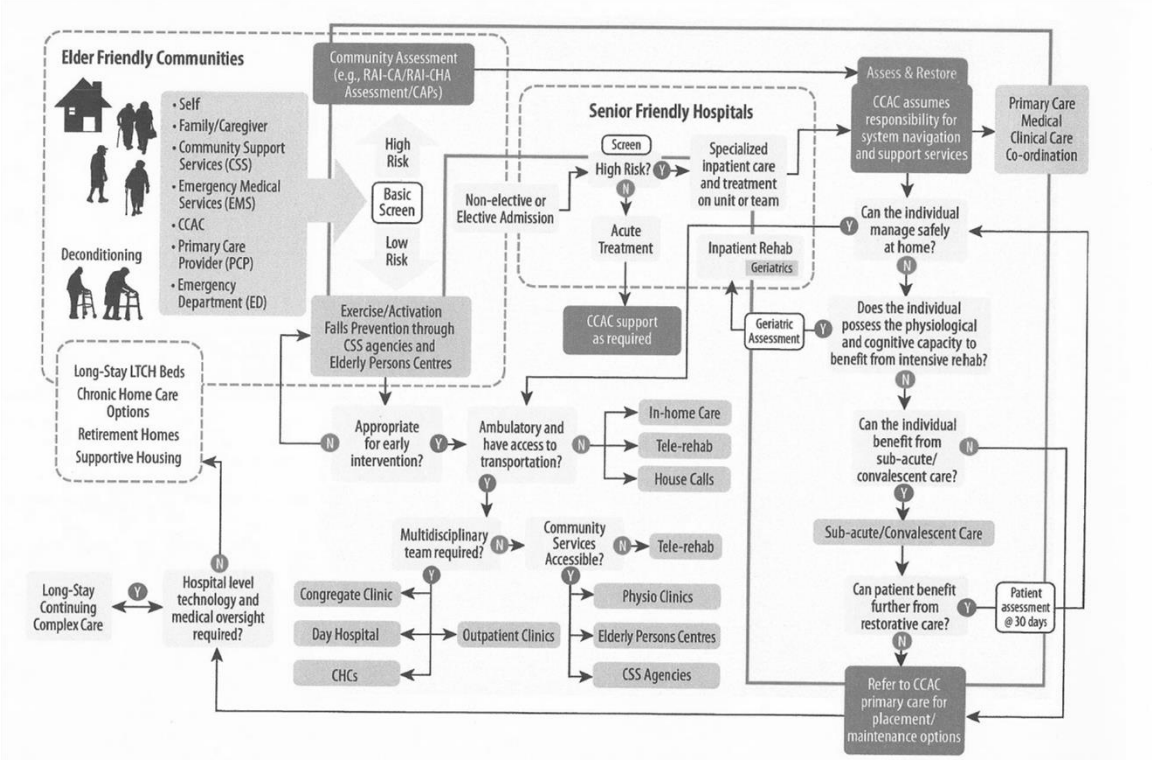


Figure 4. Proposed Assess and Restore Framework to Support Aging in Place; Sinha, 2012.

Many LHINs have used Aging at Home and other ministry funds to develop Assess and Restore programs. The above approach includes screening, prevention, in-home and community-based rehabilitative services, proactive early mobilization strategies in hospitals, and more streamlined inpatient rehabilitative services. However, Dr. David Walker (2011) concluded, following his careful analysis of the Alternate Level of Care (ALC) issue in Ontario, that there is a lack of a coherent approach to the Assess

and Restore frame of mind and programming. Many older adults with the same need profile are treated in different programs and settings that may or may not have the Assess and Restore approach as the core mandate. There is also a lack of clear program standards and admission criteria for post-acute care programs (such as transitional beds). As such, many programs in each regional LHIN are designed specifically to address the health challenges of their region.

The ARU program has been in existence since 2009 at St. Joseph's Continuing Care Centre, which is a facility that supports older adults who have completed the acute phase of their hospital care, or are in the community with needs for timely assessment of their health status. Patients receive the level of care required to restore strength, endurance, and functioning, and prepared for discharge to the community. There are currently 16 designated ARU beds with an overflow of up to 32 patients on a needs basis. The goals of the ARU are primarily, to enhance the ADL functionality of the patients before discharge to the community or other residential settings and secondly, to avoid imminent admission to acute care or facilitate discharge from acute care to the community within a 90-day period (Local Health Integrated Network, 2009).

St. Joseph's Continuing Care Centre (SJCCC) is a 64-bed class G hospital that opened on June 1, 2009 as the first stand-alone complex continuing care facility in the North East Local Health Integration Network (NE- LHIN). Due to issues with funding, these 64 beds were phased into the system by initially transferring 32 complex continuing care (CCC) patients from Health Sciences North (HSN; formally known as Hôpital Régional de Sudbury Regional Hospital) to SJCCC (Medically Complex Unit) on June 1, 2009 (70% of these patients were subsequently designated as ALC placement).

Following this transfer, a 16-bed Functional Enhancement Unit opened on August 24, 2009. On November 16, 2009, at the request of the NE-LHIN, the remaining 16 beds were opened for a time-limited period to house overflow ALC patients from HSN until March 31, 2010. At this point, at the request of the NE- LHIN, closure of the 16 ALC beds was delayed pending further discussion regarding the possibility of introducing a geriatric rehab unit (GRU) in these beds. Consequently, on September 1, 2010, with the endorsement of the Sudbury Community ALC Steering Committee, the conversion of the 16 ALC beds to GRU beds was initiated and this was in process until January 11, 2011. Finally, on November 2010, at the request of the NE-LHIN, the Functional Enhancement Unit was renamed as the Assess and Restore Unit.

The ARU program underwent a series of changes since 2009, with the intention of improving the services and enhancing the success rates. During this year, 70% of the patients were recognized as ALC patients (this ALC population was then further defined as the medically complex population); the ARU program was called the "Functional Enhancement Unit" (FEU), wherein it provided up to six months of rehabilitation. The FEU was recognized as a strategy spearheaded by NE-LHINs in efforts to reduce ED wait times and ALC in hospitals. The induction of this program was intended to provide patient flow through the health care system. By 2011, the restructured FEU was converted to the ARU.

Purpose and Research Questions

The increasing older adult population in Canada and more specifically, northeastern Ontario has greatly influenced the health care system. As older adults progress though the changes experienced throughout the aging process, a number of

conditions become more apparent that may bring them into increased contact with the health care system and need for service. Although many of these conditions are preventable and can be moderated in terms of severity and progression, poor physical health is an area that contributes to the urgent ALC situation. A growing area of great concern in this change process is the decrease or loss of capacity for sustaining oneself at home. It is of concern because a decline in ADL functioning abilities such as mobility may result in falls, which are major contributors to emergency room visits (Cott, Jaglal, Landry &Wodchis, 2006). ADL functioning decline ultimately leads to a downward cascade of events where the individual becomes immobile, socially isolated, deconditioned (loss of bone and muscle mass), and dependent.

It is widely understood that some patients remain in acute care hospitals because there is insufficient post-acute care capacity to meet their clinical and social needs in support of a swift return to their state of independent functionality. Thus, understanding and meeting the challenges of healthcare needs of older adults that have transitioned from acute care treatment to post-acute care in the ARU program at SJCCC is of great importance. This study will identify the attributes of the discharged ARU patients and examine their end of care status.

As the health care system adapts to meet the needs of older adults, it is imperative that we critically examine the factors that determine entry, discharge, and length of stay in different health care settings. Additionally, understanding how the settings of care relate to each other will benefit policy makers, and will prepare for the utilization of future healthcare systems. Comprehensive pre-admission documentation is essential in identifying risks of further functional decline and rehabilitation needs. Given the

preceding, this study will identify some of the common health issues faced by older adults that would require hospitalization as well as the impact at which transition to an alternate care setting may have contributed to successful rehabilitation. Particular research questions in this study are as follows:

1. What improvements in mobility were noted upon discharge?
2. What changes in functional independence and ADL were observed upon discharge?
3. Overall, were patients discharged in a more able-bodied state?
4. What are the issues pertaining to their intake status and functional status on discharge?

This study will not only offer valuable feedback to program administrators concerning the potential impact of the ARU program, but will also benefit stakeholders and future participants because it provides a baseline from which post-discharge experiences might be examined. It will reward the scientific community, policy makers, and will provide a platform for further improvements and research.

CHAPTER 3: METHODS

Study Overview

A retrospective chart review was conducted on 144 individuals who had been discharged from the SJCCC Assess-Restore Unit (ARU) program between June 2009 and June 2012. The Data from the Resident Assessment Instrument-Minimum Data Set Version 2.0 (RAI-MDS) which is part of the "PointClickCare" system were compiled with the use Data Abstraction Tool (DAT). The DAT facilitated the examination of patient charts, as well as, the extraction and analysis of their end of care status and functional capabilities prior to admission (PTA), and at discharge. Furthermore, the DAT analysis determined whether at the time of discharge, the ADL status improved, deteriorated, or remained unchanged.

Sample and Inclusion Criteria

The study involved a convenience sample population of 144 of the 153 individuals who entered the SJCCC ARU program over a four-year period. Out of the nine resident charts excluded from the study, four residents died while in the program and the remaining five required acute in-patient care or constant nursing. The study focused on specific criteria pertaining to rehabilitation goals, improving mobility, and functional independence as follows:

- The patient does not require hospitalization as an acute care patient.
- Vital signs, oxygen saturation levels are stable and capillary blood sugar levels are stable and/or controllable in a non-acute setting.
- The patient is under the care of a Family Physician or Nurse Practitioner.

- The patient has no precipitous or significantly declining diseases or impairments.
- The patient is unable to return or stay home with or without CCAC services, and requires access to 24-hour care, supervision, or monitoring.
- The patient is able to direct his or her own care or has a caregiver who can support discharge care needs.
- The patient demonstrates potential to improve functional status to a required level prior to discharge.
- Caregiver supports appear available to provide level of care required within the discharge environment.

Those who, at the time of admission, experienced acute delirium or impairment from traumatic brain injury requiring neuro-cognitive interventions were not included in this study.

Data Collection

This study utilized the RAI-MDS, which involves accurate and timely completion of the Initial Admission Assessment and Resident Assessment Protocols (RAPs) within 14 days of admission. The PointClickCare system provides a web-based electronic health record (EHR) platform that helps long-term care providers manage the complete life cycle of the residents, and hence ready access to all chart data required for the current study. From pre-admission to discharge, PointClickCare provides a database (RAI-MDS) of the residents' information and clinical activities through an integrated approach in supporting administrative processes, quality of care, and improvement of operational efficiencies.

The RAI-MDS 2.0 is a comprehensive, standardized tool to assess residents in long-term care (LTC) settings. Development of the tool stemmed from LTC reforms endorsed by the United States government in 1987, and was introduced in Ontario in 2005. Assessment with this instrument enables detection of residents' strengths, needs, and potential risks to inform individualized care planning and monitoring. RAI-MDS includes approximately three hundred items under sixteen headings that consist of intake/initial history, cognition, communication/senses, mood/behaviour, psychosocial well-being, functional status, elimination, diagnoses, medications, health conditions, oral/nutritional, skin, activities, treatments/procedures, care directives, and health outcomes scales.

The RAI-MDS process includes an interdisciplinary team of nursing, social services, dietary, rehab/restorative, recreational activation, pharmacy, and medical staff. The resident and family and/or legal guardian are included as integral members of the team's assessment and care planning process. The assessment and determination of the plan of care occurs within 21 days of admission or within 7 days of completion of MDS and RAPs. In the event that the patient requires a more extensive stay, the completion of a quarterly assessment within the next 92 days is necessary, followed by a review of patient care plan and an annual assessment with RAPs within a year of the previous full assessment. The RAI-MDS assessment process also provides information with respect to discharge tracking within 7 days of discharge and if necessary, re-entry tracking within 7 days of re-admission.

The data collection commenced with a pilot study of the facility's documentation processes, tools, and methods. A brief introduction to the RAI-MDS and PointClickCare

system was provided which allowed on-site access to the PointClickCare system at SJCCC Clinical Services for only those patients that had been discharged from the ARU program. Following the pilot study, which involved 15% of the patients' charts, the organization, and protocols of the (DAT) were modified, reviewed by the Vice-President of Clinical Services, and became practicable for the entire study.

Data Abstraction Tool

The final DAT were documented (see appendix A) and organized in a logical order parallel to the flow of information recorded in RAI-MDS via a master list of all the patients' charts using PointClickCare that met the aforementioned inclusion criteria. The data was categorized into variables to identify the functional status of each patient upon admission to the program and their status at the time of discharge. Each variable was segmented with numerical values for the purpose of representing the variable and for capturing the required information. These values were entered into an Excel database along with subject ID number, age, and length of stay. Variables such as "prior admission to SJCCC," "reason for hospital admission" and "co-morbidities" were gathered from reading the resident RAPs and care plans. The remainder of the variables listed on the DAT tool can be found in the RAI-MDS database as listed. The variables were specifically chosen for this study because it was believed that they would most adequately address the previously stated research questions regarding mobility, functional independence and ADLs and finally intake and discharge status. The DAT is divided into two sections: prior to admission (PTA) and discharge recommendations. The first section was designed to capture the demographic information which includes the "patient's admission from location", "admission history to SJCCC," "marital status," and

"reason for admission." Additionally, variables that referred to patient's "fall history", "use of antipsychotic medication" and "co-morbidities" were listed on the DAT. Lastly, mobility and ADL functional capacity with respect to "transferring between surfaces," "feeding", "dressing/grooming," "bathing/toileting" were also listed as variables. Specific detail was provided to each ADL in order to understand the level of independence of each as it applies to the patient (i.e. independent, supervision, limited assistance, extensive assistance, and total dependence). The second portion of the DAT was aimed at capturing the patient's functional status on discharge once again with respect to ADL functionalities and mobility aid/devices. Variables were listed in like manner with the inclusion of a few variables such as "discharge facility", "self-sufficiency" and "ADL function compared to admission." The DAT was designed to effectively display the patient's status (relative to the research questions) on intake and discharge. A reference manual (see Appendix A) was created to provide direction as to how the data was compiled. Moreover, the reference manual provided the required protocols with respect to the extraction and coding of the values in the DAT.

To safeguard and maintain confidentiality and anonymity, patient records were randomly selected and assigned unique identifier codes. All personal information such as, name, date of birth, address, phone number, physician name, social insurance and health card numbers were excluded in the DAT and therefore, not pertinent to this study.

Data Analysis

The computer software 'Statistical Package for Social Sciences' 20.0 (SPSS) was used for the data sorting, organization, and analysis, as well as, the presentation of tests results. The data were first described using frequencies (percentages). The analysis

consisted of cross-tabulations, using the chi-squared statistic as a measure of statistical significance. Phi, a statistic based on chi-square for two by two tables was used as a measure of association; phi varies between -.01 (no correlation) and +.01 (very high correlation). A Wilcoxon signed ranks computation was also used to compare the distributions of the residents ADL and functional capacity before admission to their functional capacity upon discharge in order to examine any significant difference with a p-value of .05 or <.05. The patient's end of care status and functional capacity was also analyzed to determine whether at the time of discharge, the ADL status improved, deteriorated, or remain unchanged since admission. Key variables for this analysis were ADL functional capacity, and mobility aids/devices. For example, where an individual was admitted with the need for extensive assistance with respect to the ADL function of transferring between surfaces but was discharged with limited assistance, this means that there was an improvement. Should the patient have remained at the same level when discharged, it signified that there was no improvement. If the patient were to have become very dependent in order to complete this task, this implies a deterioration in ADL functioning. With respect to mobility devices, where the patient started the ARU program with a wheelchair, for example, but was discharged with a wheeled walker, the dependency shift from total assistance to partial assistance indicated that the patient improved.

Ethical Consideration

Ethics approval was obtained from Laurentian University Research Ethics Board, Health Sciences North, and St. Joseph's Continuing Care Centre Research Ethics Board

(see appendix B). Protection of Health Information Privacy Act (PHIPA) regulations were followed including restriction of chart information to only the primary researcher.

CHAPTER 4: RESULTS AND ANALYSIS

Pivotal to the retrospective chart review was to determine whether the patients that have gone through the ARU rehabilitation program at SJCCC experienced improvements in their functional capacity and ADLs. The essential characteristics were overall self-sufficiency, and ADL function and mobility (see Table 2). The study also included the following characteristics: age, gender, length of stay, marital status, history and reason for admission, ADL, comorbidities, location before admission, location after discharge. Variables such as reason for admission and comorbidities particularly are necessary to understand the status of the patient prior to entering the program and the reasons for admission to the program. With aging, the presence of comorbidities increases and may contribute to a declining health status. Illustrated in figure 5 are the overall comorbidities of patients in the ARU program. The top three comorbidities were heart/circulation, musculoskeletal, and other.

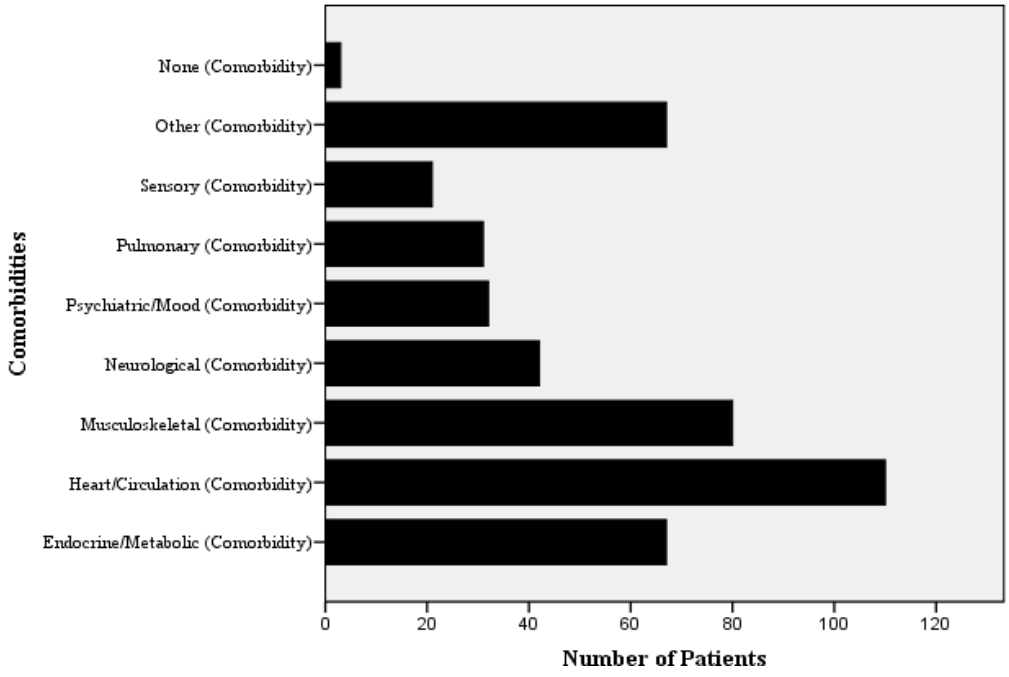


Figure 5. Overall Comorbidities of ARU Patients.

As a whole, patients in this study were admitted due to a loss of function resulting from falls. Eighty-one (56.3%) patients were admitted to inpatient acute care due to falls followed by 45 patients (31.3%) who were admitted for other medical and health reasons and finally 18 patients (12.5%) who were not admitted directly from the program or whose admission status was unknown.

When comparing the influence that reason for hospital admission has on a patient's fall history within the last six months, 78 patients (54.2%) experienced falls 1-2 times prior to admission to SJCCC whereas 56 patients (38.9%) experienced no fall and 10 patients (6.9%) fell multiple times (table 1). Additionally, this result provides considerable evidence that 60 out of the 78 (76.9%) individuals admitted to inpatient acute care due to falls had indeed experienced falls prior to admission. The chi-squared value of 48.55 and p-value of <0.001, suggests the differences are significant and that the reason for hospital admission vs. fall history within the last six months are dependent on each other.

Table 1

Crosstabulation of Reason for Admission and Fall History

		Fall history within last six months			
		No History	1-2 Times	N/A	Total
Reason for Hospital Admission	Falls	12	60	9	81
	Other Illness	34	11	0	45
	N/A	10	7	1	18
	Total	56	78	10	144

Of the 144 patients discharged since 2009, 32 patients entered the program with extensive assistance when transferring between surfaces and 31% patients improved. Twenty-six patients entered the program with extensive assistance when dressing or grooming and 11% improved. Sixty-two patients entered the program needing extensive assistance when bathing or toileting and 21% improved. Ninety patients entered the program using wheel chairs and 12% improved to wheeled walker as their primary mode of locomotion. Seventy-four patients entered the program using wheeled walkers and 5% improved the cane as their primary mode of locomotion. Finally, twenty-six patients entered the program using canes and 65% improved upon discharge by walking independently. Although assessments and daily programs are designed relative to each person's capabilities and medical history, for the majority of patients in the study the ADL function as compared to admission did not change (see Figure 6).

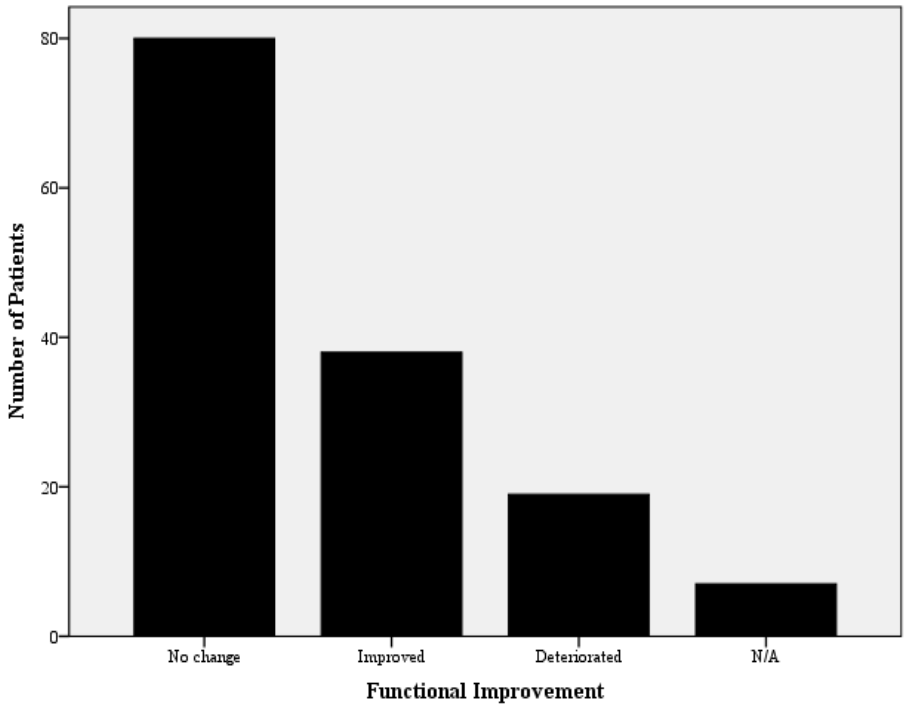
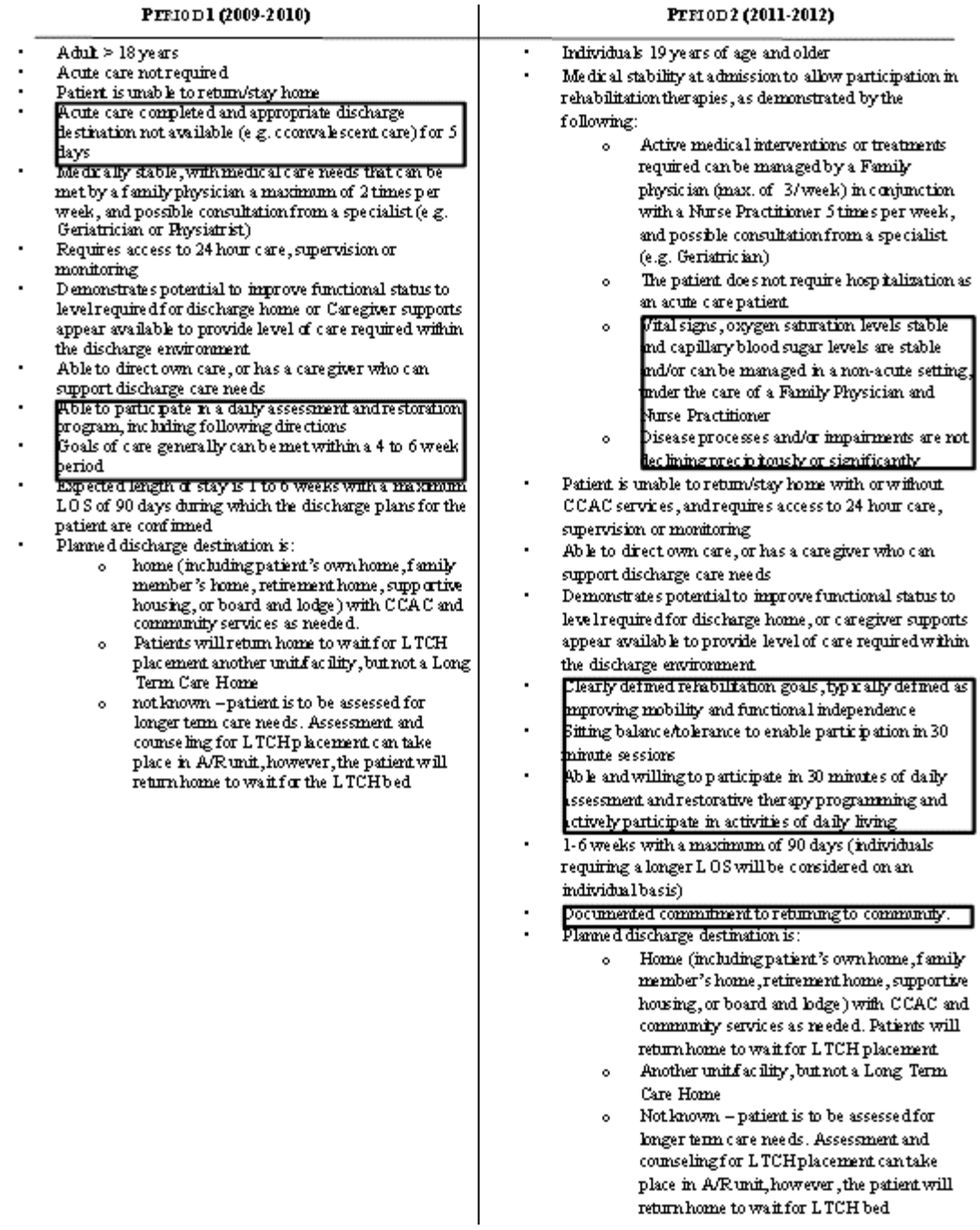


Figure 6. Residents' Overall ADL Function Compared to Admission.

Analyzing the patient's functional capabilities upon discharge from the ARU program provides a snapshot of the changes and/or improvements in ADL functionality, mobility aid/devices, and end of care status. However, based on the previous knowledge that the program eligibility changed (including the wide variances in data) consideration was needed to delve further into the impact the program changes may have placed on two different periods (period one: 2009 and 2010; period two: 2011 and 2012). Figure 7 illustrates evolution of the program with respect to the intake criteria.

The ages in the study range from 20 through 97 but in period two, the range was between 40 and 96. In period one, the ratio of females to male was 44:34 (56.4%) but in period two, it was slightly higher, 39:27 (59.1%). The study did not elaborate on the gender because it was not a criterion for the level and outcome of care. The marital status of the patients was useful in determining the possibility for the patients to obtain help, if married, and the benefits of post-discharge support. The study revealed some interdependence between the length of stay and ADL functions. However, ADL functions of the entire study population did not reflect effective measure of rehabilitative success. It is for this reason that examination of the individual functions, as well as, overall self-sufficiency as compared to admission was preferred.



PERIOD 1 (2009-2010)

- Adult > 18 years
- Acute care not required
- Patient is unable to return/stay home
- Acute care completed and appropriate discharge destination not available (e.g. convalescent care) for 5 days
- Medically stable, with medical care needs that can be met by a family physician a maximum of 2 times per week, and possible consultation from a specialist (e.g. Geriatrician or Physiatrist)
- Requires access to 24 hour care, supervision or monitoring
- Demonstrates potential to improve functional status to level required for discharge home or Caregiver supports appear available to provide level of care required within the discharge environment
- Able to direct own care, or has a caregiver who can support discharge care needs
- Able to participate in a daily assessment and restoration program, including following directions
- Goals of care generally can be met within a 4 to 6 week period
- Expected length of stay is 1 to 6 weeks with a maximum LOS of 90 days during which the discharge plans for the patient are confirmed
- Planned discharge destination is:
  - home (including patient's own home, family member's home, retirement home, supportive housing, or board and lodge) with CCAC and community services as needed.
  - Patients will return home to wait for LTCH placement another unit/facility, but not a Long Term Care Home
  - not known – patient is to be assessed for longer term care needs. Assessment and counseling for LTCH placement can take place in A/R unit, however, the patient will return home to wait for the LTCH bed

PERIOD 2 (2011-2012)

- Individuals 19 years of age and older
- Medical stability at admission to allow participation in rehabilitation therapies, as demonstrated by the following:
  - Active medical interventions or treatments required can be managed by a Family physician (max. of 3/week) in conjunction with a Nurse Practitioner 5 times per week, and possible consultation from a specialist (e.g. Geriatrician)
  - The patient does not require hospitalization as an acute care patient
  - Vital signs, oxygen saturation levels stable and capillary blood sugar levels are stable and/or can be managed in a non-acute setting, under the care of a Family Physician and Nurse Practitioner
  - Disease processes and/or impairments are not declining precipitously or significantly
- Patient is unable to return/stay home with or without CCAC services, and requires access to 24 hour care, supervision or monitoring
- Able to direct own care, or has a caregiver who can support discharge care needs
- Demonstrates potential to improve functional status to level required for discharge home, or caregiver supports appear available to provide level of care required within the discharge environment
- Clearly defined rehabilitation goals, typically defined as improving mobility and functional independence
- Sitting balance/tolerance to enable participation in 30 minute sessions
- Able and willing to participate in 30 minutes of daily assessment and restorative therapy programming and actively participate in activities of daily living
- 1-6 weeks with a maximum of 90 days (individuals requiring a longer LOS will be considered on an individual basis)
- Documented commitment to returning to community.
- Planned discharge destination is:
  - Home (including patient's own home, family member's home, retirement home, supportive housing, or board and lodge) with CCAC and community services as needed. Patients will return home to wait for LTCH placement
  - Another unit/facility, but not a Long Term Care Home
  - Not known – patient is to be assessed for longer term care needs. Assessment and counseling for LTCH placement can take place in A/R unit, however, the patient will return home to wait for LTCH bed

Figure 7. ARU Eligibility Criteria; Local Health Integrated Network, 2009; St. Joseph's Continuing Care Centre, 2011

Table 2

Summary of Patient Characteristics per Cohort Period

	Period one (2009-2010)		Period two (2011-2012)	
	n	%	n	%
Discharged (*n*=144)	78	54.20%	66	45.80%
Age (mean)	72.9		74.8	
≤ 65	18	23.10%	14	21.20%
≥ 65	60	76.90%	52	78.80%
Gender				
Female	44	56.40%	39	59.90%
Male	34	43.60%	27	40.90%
Length of Stay (mean)	105		57.9	
Short (≤30 days)	11	14.00%	18	27.30%
Intermediate (31-90 days)	39	50.00%	39	59.10%
Long (≥90 days)	28	35.90%	9	13.60%
Marital Status				
Married	33	42.30%	26	39.40%
Never Married	8	10.30%	4	60.60%
Widowed	27	34.60%	31	46.90%
Separated	3	3.80%	2	3.10%
Divorced	4	5.10%	3	4.50%
Unknown	3	3.80%	0	0.00%
Admission Location				
Private Home (HHS)	0	0.00%	1	1.50%
Private Home (no HHS)	4	5.10%	4	60.60%
Acute Care Hospital	62	79.50%	57	86.40%
Assisted Living	11	14.10%	4	60.60%
Long Term Care	1	1.30%	0	0.00%
Other	0	0.00%	0	0.00%
Discharge Location				
Home with Support Care	3	3.80%	1	1.50%
Home without Support Care	11	14.10%	12	18.20%
Inpatient Acute Care	10	12.80%	9	13.60%
Long Term Care	0	0.00%	0	0.00%
Retirement Home	2	2.60%	0	0.00%
Rehabilitation Facility	2	2.60%	0	0.00%
Residential Care Services	11	14.10%	4	6.60%
Home Care Services	33	42.30%	36	54.50%
Deceased	6	7.70%	4	60.60%

The patient's characteristics chart (see Table 2) relates to two cohort periods from 2009 to 2012 and summarizes the characteristics of each period. More patients were discharged in the 2009-2010 (period one) than in 2011-2012 (period two) and period one

comprised younger patients than period two. The majority of patients in period one were married women over 65 years of age (see Figure 8). Although the majority of patients were admitted because of falls, 79.5% of the patients came from acute care hospitals during period one and 43.5% were due to a fall. On the other hand, period two had 86.4% of admittance from acute care hospitals and comprised 53% of falls history. Overall, the mean length of stay in the program was 83.16 days. However, patients in period one had an extended stay of 104.5 days (due to outliers) compared to 57.94 days in period two. Eighty percent of the patients in period two and 76.9 % in period one were discharged to a home location, which SJCCC defines as, the following: home care services, residential services, retirement home, home with support care, and home without support care.

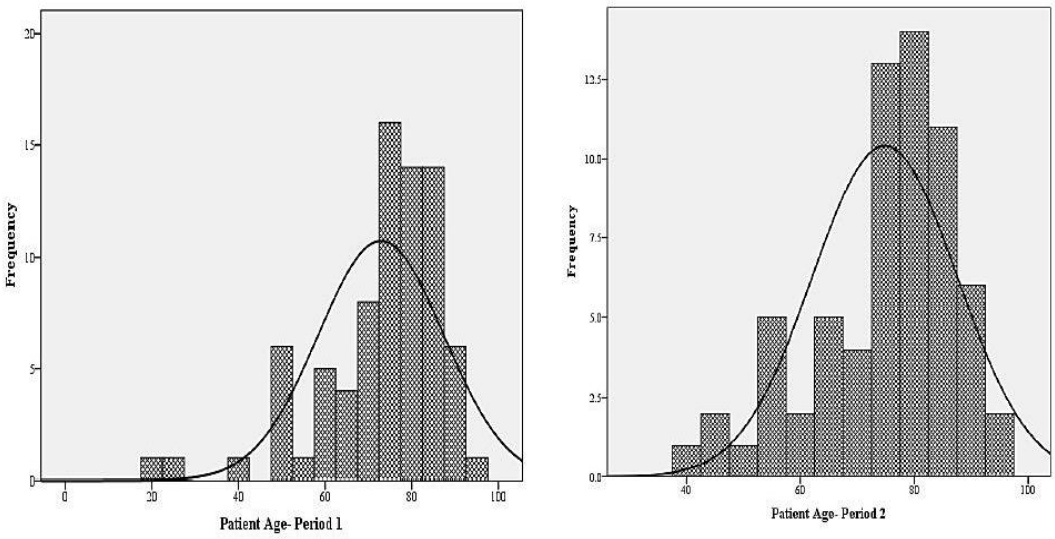


Figure 8. The Age Distribution of Patients in Period one and two.

Although some patients were discharged before the 90-day period, when the length of stay (LOS) was analyzed by period of entry, there was a noticeable difference. The majority of the study's sample (n=78, 54.2%) were admitted in the 2009/2010

period. A Phi coefficient computation resulted in a Phi value of .832 indicating a strong association, which is an indication that the association between length of stay and period of entry to SJCCC is very high and positive. The average LOS at SJCCC over the span of four years was 83.17 days. In 2009/2010, patients spent on average about 104.5 days and in 2011/2012, the average was 57.94 days. Although the Phi coefficient (see Table 3) indicates a strong relationship between the two variables, the p-value (.349) suggests no correlation.

Table 3

Phi Coefficient Test - Length of Stay and Period of Entry

		Value	Approx. Sig.
Nominal by Nominal	Phi	.832	.349
	Cramer's V	.832	.349
	N of Valid Cases	144	

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.

The majority of patients experienced no change in their overall self-sufficiency (see Figure 9). However, in period one, there was a greater rate of improvement than in period two (see Figure 10). Additionally, in period two, the rate of deterioration in a patient's self-sufficiency was much greater than in period one. A Phi coefficient computation resulted in a Phi value of 1.319 indicating a strong association (see Table 4). However, the data reveal that although the Phi coefficient indicates a strong relationship between the two variables, the *p-value* (.930) suggests that the correlation is insignificant

and that although the LOS on average was significantly longer in period one, their self-sufficiency greatly improved.

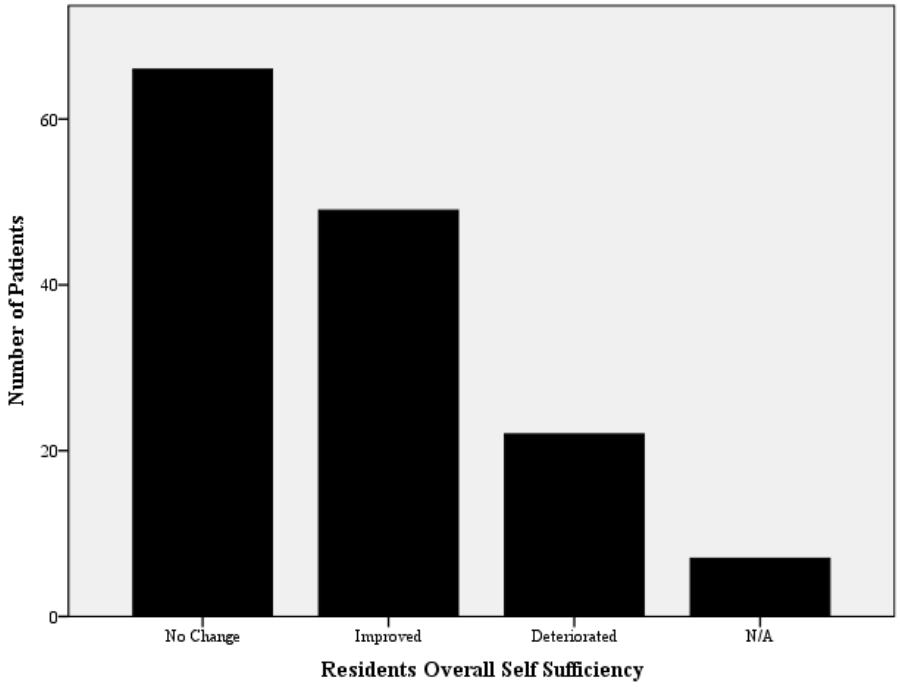


Figure 9. Residents' Overall Self-Sufficiency/Level of Care Compared to Admission.

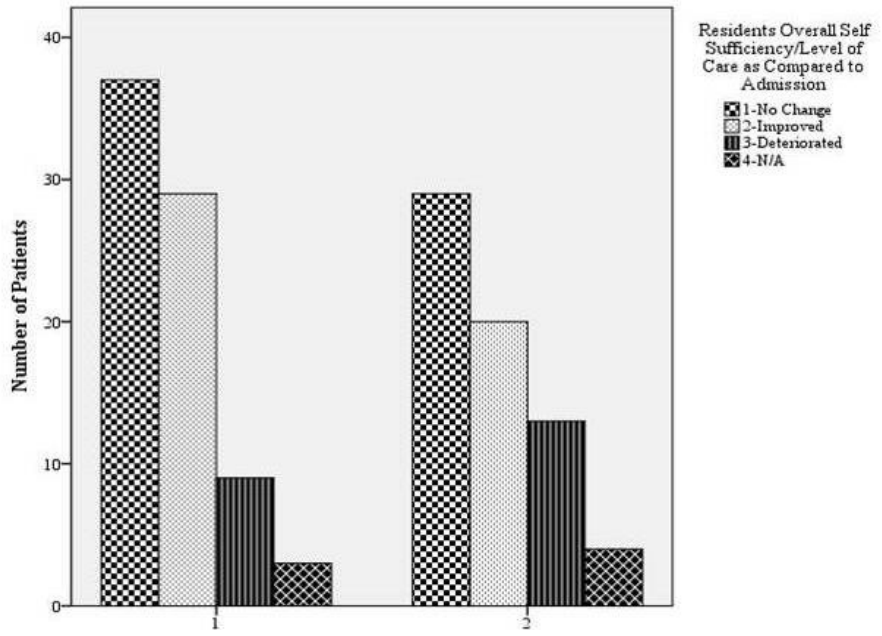


Figure 10. Residents' Overall Self-Sufficiency/Level of Care by Year of Admission.

Table 4

Phi Coefficient Test - Length of Stay and Overall Self-Sufficiency

		Value	Approx. Sig.
Nominal by Nominal	Phi	1.319	.930
	Cramer's V	.762	.930
N of Valid Cases		144	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

End of Care Functional Status

Table 5 compares the two periods with respect to their rehabilitative success rates in the patient's functionality. Success in this study is defined as an improvement in one or all of the ADL functionalities as well as reduced use of mobility devices. Thus, period one had an overall improvement success rate of 29.2% and 25.8% in period two, which is further illustrated in figures 11-15. Patients discharged in period one experienced a slightly greater rate of improvement in their ADL functionality and dependency on mobility devices upon discharge. This improvement represents 10% of the entire study.

In the ADL function for the patients to transfer between surfaces with ease, the level of success, being the improvement between PTA and Discharge), was 29% of the study. There was no significant difference in the percentage of improvement for each period, being 20% and 22% respectively (see Figure 11). Patients' abilities with feeding, (see Figure 12) saw a 15% level of improvement, which also matched the ratio of the patients whose status deteriorated. The period differences are insignificant, but 18% of the patients who improved stayed longer than 90 days. In the case of the patients' ability with dressing/grooming, there was a 25% improvement level but almost 72% of those

who improved stayed longer than 30 days, with the majority in period one of the program (see Figure 13). The overall level of improvement in the patients' ability with bathing/toileting was 28% (see Figure 14). Overall, there was very small improvement of 10.4% in the patients admitted with mobility devices (see Figure 15).

Table 5

Success Rates for Patients ADL Functionality and Use of Mobility Devices

	Period one 2009-2010		Period two 2011-2012	
Status After Care	*N=78*		*N=66*	
Difficulty Transferring Between Surfaces				
Improved	22	28.20%	20	30.30%
No Improvement	53	67.90%	36	54.50%
Deteriorated	3	3.80%	10	15.20%
Ability with Feeding - Status after Care				
Improved	15	19.20%	7	10.60%
No Improvement	56	71.80%	51	72.30%
Deteriorated	7	8.90%	8	12.10%
Ability with Dressing/Grooming				
Improved	21	26.90%	15	22.70%
No Improvement	52	66.70%	40	60.60%
Deteriorated	5	6.40%	11	16.70%
Ability with Bathing/Toileting				
Improved	25	32.10%	15	22.70%
No Improvement	48	61.50%	40	60.60%
Deteriorated	5	6.40%	11	16.70%
Mobility Devices				
Improved	8	10.30%	7	10.60%
No Improvement	68	87.20%	57	86.40%
Deteriorated	2	2.60%	2	3.00%
OVERALL IMPROVEMENT		29.20%		25.80%

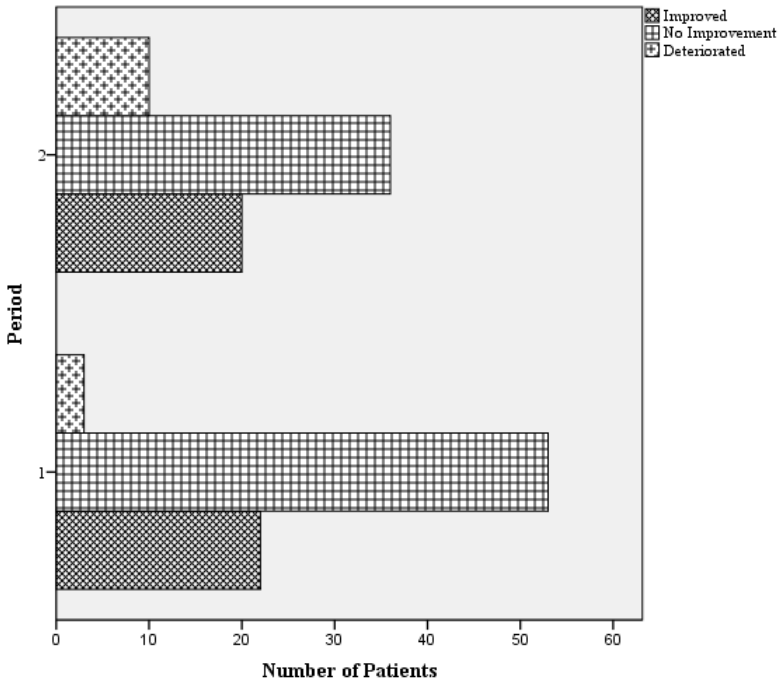


Figure 11. Difficulty Transferring Between Surfaces - Status after Care.

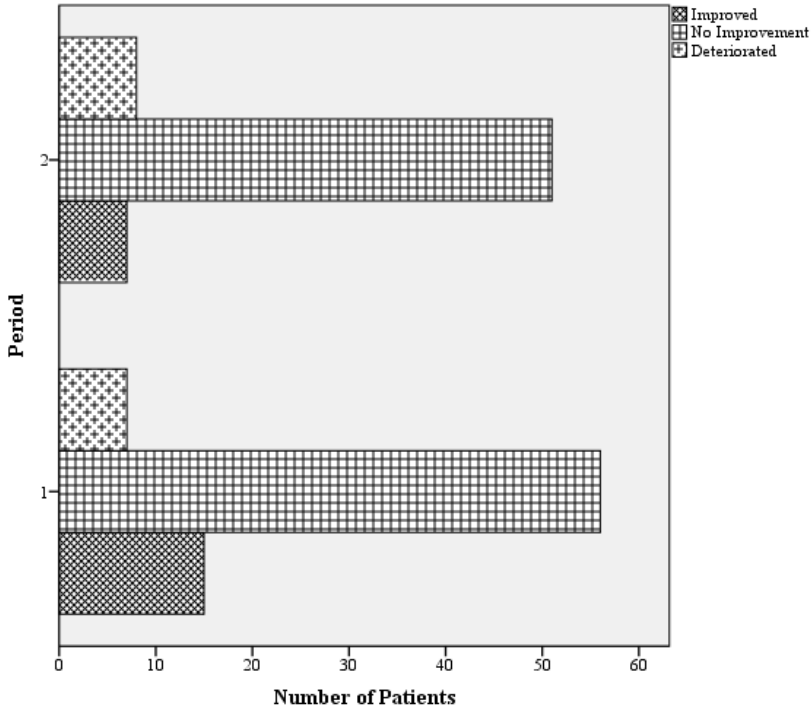


Figure 12. Ability with Feeding - Status after Care.

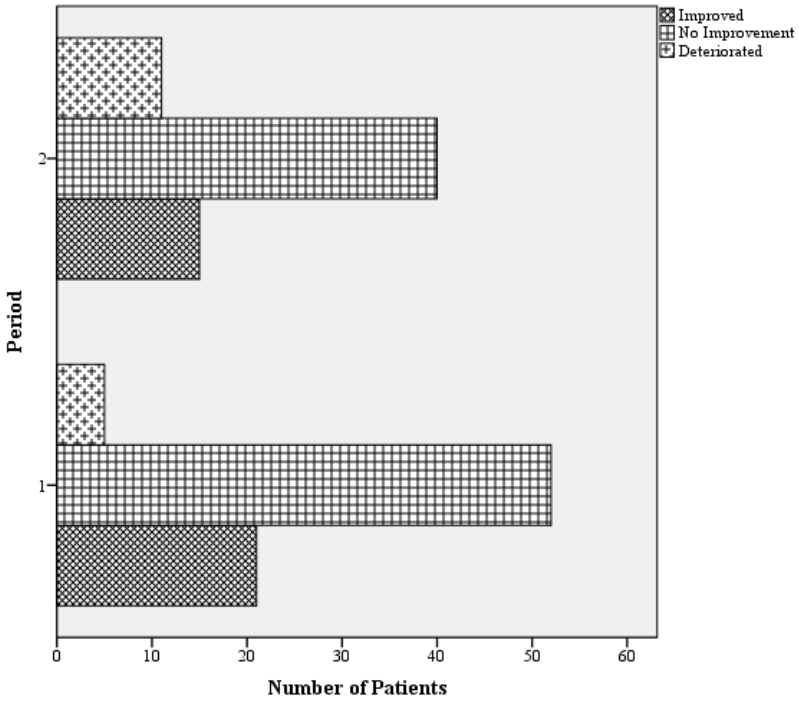


Figure 13. Ability with Dressings/Grooming - Status after Care.

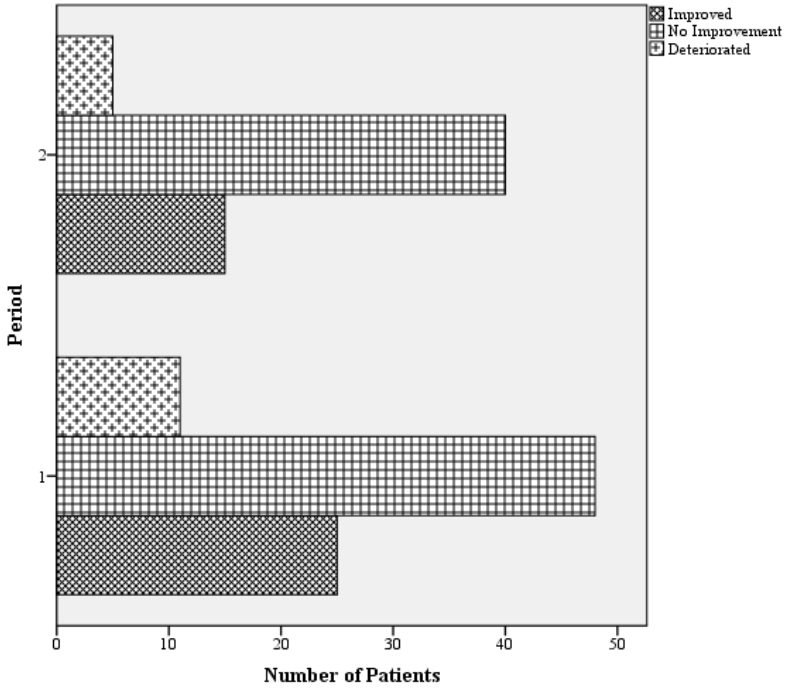


Figure 14. Ability with Bathing/Toileting - Status after Care.

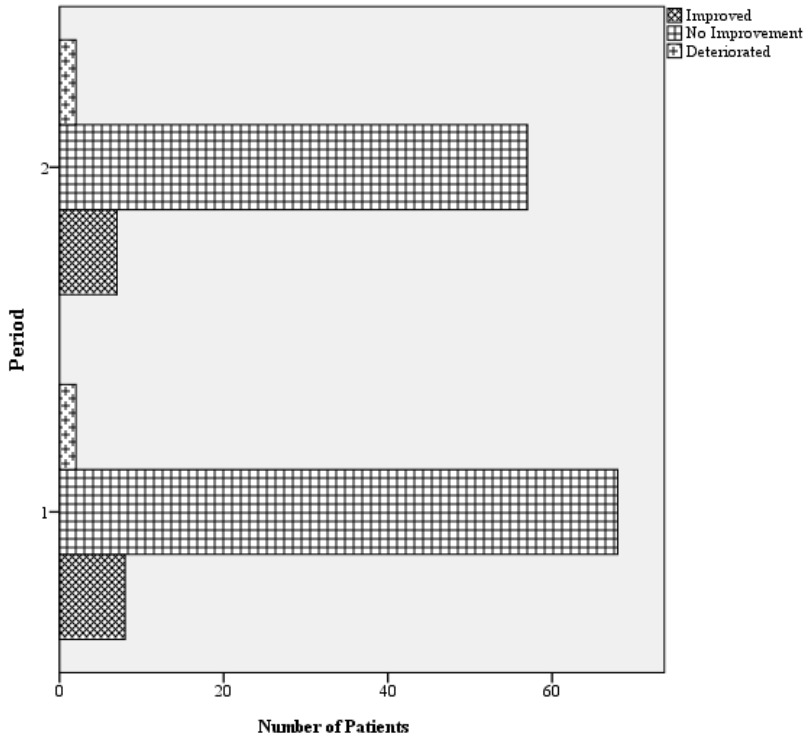


Figure 15. Mobility Devices—Status after Care

Mobility Aid and Devices—(PTA) and (Discharge)

In the cross-tabulation of these two variables, the data (see Table 6**)** shows that in a span of four years, the majority of the study's population (*n*=141, 97.9 %) used one or more mobility aids prior to admission to SJCCC and 137 patients (95.1%) used one or more mobility aids on discharge. The data also shows that the majority of patients (*n*=84, 58.3%) used a wheelchair as a mobility device prior to admission as well as on discharge (*n*=76, 52.8%). The result (see Table 7**)** indicates that the *p-value* for Mobility Aid Devices (PTA and Discharge) such as Wheelchair, Wheeled Walker, and Cane were .080, 1.000, and 1.000 respectively. The result further suggests that, both PTA and Discharge were not significantly different for each variable.

Table 6

Crosstabulation of Mobility Aid (PTA and Discharge)

		N	Mean Rank	Sum of Ranks
Mobility Aid (Discharge) - Mobility Aid (PTA)	Negative Ranks	3[a]	3.67	11.00
	Positive Ranks	7[b]	6.29	44.00
	Ties	134[c]		
	Total	144		
Mobility Devices- Wheel Chair (Discharge) - Mobility Devices- Wheelchair (PTA)	Negative Ranks	0[d]	.00	.00
	Positive Ranks	0[e]	.00	.00
	Ties	64[f]		
	Total	64		
Mobility Devices- Wheeled Walker (Discharge) - Mobility Devices- Wheeled Walker (PTA)	Negative Ranks	0[g]	.00	.00
	Positive Ranks	0[h]	.00	.00
	Ties	54[i]		
	Total	54		
Mobility Devices- Cane (Discharge) - Mobility Devices- Cane (PTA)	Negative Ranks	0[j]	.00	.00
	Positive Ranks	0[k]	.00	.00
	Ties	9[l]		
	Total	9		

a. Mobility Aid (Discharge) < Mobility Aid (PTA); b. Mobility Aid (Discharge) > Mobility Aid (PTA); c. Mobility Aid (Discharge) = Mobility Aid (PTA); d. Mobility Devices- Wheel Chair (Discharge) < Mobility Devices- Wheelchair (PTA); e. Mobility Aid (Discharge) < Mobility Aid (PTA); f. Mobility Devices- Wheel Chair (Discharge) = Mobility Devices- Wheelchair (PTA); g. Mobility Devices- Wheeled Walker (Discharge) < Mobility Devices- Wheeled Walker (PTA); h. Mobility Devices- Wheeled Walker (Discharge) > Mobility Devices- Wheeled Walker (PTA); i. Mobility Devices- Wheeled Walker (Discharge) = Mobility Devices- Wheeled Walker (PTA); j. Mobility Devices- Cane (Discharge) < Mobility Devices- Cane (PTA); k. Mobility Devices- Cane (Discharge) > Mobility Devices- Cane (PTA); l. Mobility Devices- Cane (Discharge) = Mobility Devices- Cane (PTA)

Table 7

Wilcoxon Test for Mobility Aid and Devices at PTA and at Discharge

	Mobility Aid (Discharge) - Mobility Aid (PTA)	Mobility Devices- Wheel Chair (Discharge) - Mobility Devices- Wheelchair (PTA)	Mobility Devices- Wheeled Walker (Discharge) - Mobility Devices- Wheeled Walker (PTA)	Mobility Devices- Cane (Discharge) - Mobility Devices- Cane (PTA)
Z	-1.751[b]	.000[c]	.000[c]	.000[c]
Asymp. Sig. (2-tailed)	0.08	1	1	1

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

c. The sum of negative ranks equals the sum of positive ranks.

ADL's at PTA and Discharge

In the cross-tabulation of these two variables, the data (see Table 8) shows that in a span of four years, the majority of the study's population was independently able to carry out the following ADL functions PTA: transferring between surfaces (n=39, 27.1%), feeding (n=105, 72.9%), and finally dressing and grooming (n=50, 34.7%). The majority of patients required extensive assistance with ADL functions of bathing and toileting (n=62, 43.1%). Upon discharge, the majority of the study's population was independently able to carry out the following ADL functions: transferring between surfaces (n=50, 34.7%), feeding (n=93, 64.6%), and finally dressing and grooming (n=56, 38.9%. Furthermore, the majority of patients required extensive assistance with the ADL function of bathing and toileting (n=49, 34%). The result indicates that the p-value (see Table 9) for all ADL functions such as transferring between surfaces, feeding, dressing and grooming and bathing and toileting were .430, .024, .574, and .883 respectively (see Table 10). The result further suggests that, with the exception of ability with feeding, both PTA and Discharge are not significantly different for each variable.

Table 8

ADL Independence upon PTA and at Discharge

	ADL Independence	
	PTA	Discharge
Transfer Between Surfaces	39	50
Feeding	105	93
Dressing/Grooming	50	56

Table 9

Crosstabulation of ADL's at PTA and at Discharge

		N	Mean Rank	Sum of Ranks
ADL- Difficulty Transferring Between Surfaces (Discharge) - ADL- Difficulty transferring between surfaces (PTA)	Negative Ranks	33[a]	26.11	861.5
	Positive Ranks	22[b]	30.84	678.5
	Ties	89[c]		
	Total	144		
ADL- Ability with Feeding (Discharge) - ADL- Ability with feeding (PTA)	Negative Ranks	12[d]	17	204
	Positive Ranks	25[e]	19.96	499
	Ties	107[f]		
	Total	144		
ADL- Ability with Dressing/Grooming (Discharge) - ADL- Ability dressing/grooming (PTA)	Negative Ranks	26[g]	24.17	628.5
	Positive Ranks	26[h]	28.83	749.5
	Ties	92[i]		
	Total	144		
ADL- Ability with Bathing/Toileting (Discharge) - ADL- Ability bathing/toileting (PTA)	Negative Ranks	30[j]	26.23	787
	Positive Ranks	25[k]	30.12	753
	Ties	89[l]		
	Total	144		

a. ADL- Difficulty Transferring Between Surfaces (Discharge) < ADL- Difficulty transferring between surfaces (PTA); b. ADL- Difficulty Transferring Between Surfaces (Discharge) > ADL- Difficulty transferring between surfaces (PTA); c. ADL- Difficulty Transferring Between Surfaces (Discharge) = ADL- Difficulty transferring between surfaces (PTA); d. ADL- Ability with Feeding (Discharge) < ADL- Ability with feeding (PTA); e. ADL- Ability with Feeding (Discharge) > ADL- Ability with feeding (PTA); f. ADL- Ability with Feeding (Discharge) = ADL- Ability with feeding (PTA); g. ADL- Ability with Dressing/Grooming (Discharge) < ADL- Ability dressing/grooming (PTA); h. ADL- Ability with Dressing/Grooming (Discharge) > ADL- Ability dressing/grooming (PTA); i. ADL- Ability with Dressing/Grooming (Discharge) = ADL- Ability dressing/grooming (PTA); j. ADL- Ability with Bathing/Toileting (Discharge) < ADL- Ability bathing/toileting (PTA); k. ADL- Ability with Bathing/Toileting (Discharge) > ADL- Ability bathing/toileting (PTA); l. ADL- Ability with Bathing/Toileting (Discharge) = ADL- Ability bathing/toileting (PTA)

Table 10

Wilcoxon Test for ADL's at PTA and at Discharge

	ADL- Difficulty Transferring Between Surfaces (Discharge) - ADL- Difficulty transferring between surfaces (PTA)	ADL- Ability with Feeding (Discharge) - ADL- Ability with feeding (PTA)	ADL- Ability with Dressing/Grooming (Discharge) - ADL- Ability dressing/grooming (PTA)	ADL- Ability with Bathing/Toileting (Discharge) - ADL- Ability bathing/toileting (PTA)
Z	-.789[b]	-2.255[c]	-.562[c]	-.147[b]
Asymp. Sig. (2-tailed)	0.43	0.024	0.574	0.883

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

c. Based on negative ranks.

Discharge Facilities and Levels of Care

Data analysis also shows that almost half of the study's population (n=69, 47.9%) were discharged to home care services and 23 patients (16.0%) were discharged to home were they would have more independent level of care (see Table 11). The computation of a Phi coefficient test to measure the strength of the association between the two variables resulted in a .960 Phi value indicating that the association between discharge facility/level of care and return to SJCCC is very high and positive. Therefore, based on these results, the discharge facility and the level of care available upon discharge will most likely determine the patient's inclination to return to SJCCC. The results also reveal a p-value of <.001, indicating that this association is statistically significant (see Table 12).

Table 11

Discharge Facility/Level of Care and Return to SJCCC

		Return Anticipated to SJCC			Total
		Yes	No	N/A	
Discharge Facility/Level of care	Home with support care	0	4	0	4
	Home without support care	0	23	0	23
	Inpatient acute care	4	15	0	19
	Long term care	0	2	0	2
	Retirement home	0	2	0	2
	Rehabilitation facility	1	14	0	15
	Home Care Services	1	68	0	69
	Deceased	0	1	9	10
	Total	6	129	9	144

Table 12

Phi Test - Discharge Facility/Level of Care and Return to SJCCC

		Value	Approx. Sig.
Nominal by Nominal	Phi	1.004	.000
	Cramer's V	.710	.000
	N of Valid Cases	144	

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

The severity of functional impairments and the need for further assistance with ADLs often determine whether the patient can safely manage at home, or requires further care at home. However, a comparison of patient characteristics across the levels of care at discharge lacked consistency with the patients' overall improved functional status in one or more ADLs (see Tables 13-20). For instance, patients showed a lower level of improvement in all ADL functions yet were discharged to a more independent level of care setting (such as home care services) versus some other level of care. A majority of patients were discharged to home care services (see Table 13) which provide health and

support services for people with health needs who wish to remain in their homes. This seems to be the most attractive option because it provides necessary care and support for them to live independently. The ADL improvement for those patients who were discharged to a home with support care was less than 1% (see Table 14). Patients discharged to this facility received services that allowed them maintain some form of independence while receiving a wide range of health services. However, there were some patients (see Table 15) who were not deemed medically able to live independently with or without the presence of a family member or guardian yet were still discharged to home without support care irrespective of no improvement in the respective ADL categories. Table 16 illustrates that although rehabilitation facilities provide care for stabilized patients who might still need rehabilitative care beyond what they received at SJCCC in order for them to live independently in a home environment, fewer than 1% of the patients (n=2) were discharged to rehabilitation facilities. Moreover, of the majority of the 75 patients discharged to residential care services, 14 (18.6%) improved on one or more ADL functionalities (see Table 17). Less than 1% of the patients were discharged to retirement homes (see Table 18). Retirement homes are independent living facilities for older adults. Personal care and medical services are not usually offered as it is a requirement that occupants are able to live independently with the opportunity for visiting nurses and physicians to provide supplementary care. Sixty-four percent of patients discharged to inpatient acute care experienced no improvements (see Table 19). The patients who were discharged to inpatient acute care went to HSN to receive immediate attention, mainly due to medical emergencies. Consideration needs to be given to

patients who show overall improvements for these patients and their statistics were nullified because they were deceased (see Table 20).

Table 13

Discharge Location—Home Care Services

	Functional Improvement		
Activities of Daily Living	Yes	No	Deteriorated
Difficulty Transferring between Surfaces	18	44	7
Ability with Feeding	4	58	7
Dressing/Grooming	16	44	9
Bathing/Toileting	15	44	10
Mobility Devices	7	61	1

*Tab*le 14

Discharge Location—Home with Support Care

	Functional Improvement		
Activities of Daily Living	Yes	No	Deteriorated
Difficulty Transferring between Surfaces	3	1	0
Ability with Feeding	1	2	1
Dressing/Grooming	1	2	1
Bathing/Toileting	2	1	1
Mobility Devices	0	3	1

Table 15

Discharge Location—Home without Support Care

	Functional Improvement		
Activities of Daily Living	Yes	No	Deteriorated
Difficulty Transferring between Surfaces	7	14	2
Ability with Feeding	1	19	3
Dressing/Grooming	2	20	1
Bathing/Toileting	6	16	1
Mobility Devices	3	19	1

Table 16

Discharge Location—Rehabilitation Facility

	Functional Improvement		
Activities of Daily Living	Yes	No	Deteriorated
Difficulty Transferring between Surfaces	0	2	0
Ability with Feeding	1	1	0
Dressing/Grooming	2	0	0
Bathing/Toileting	2	0	0
Mobility Devices	0	1	1

Table 17

Discharge Location—Residential Care Services

	Functional Improvement		
Activities of Daily Living	Yes	No	Deteriorated
Difficulty Transferring between Surfaces	3	12	0
Ability with Feeding	2	12	1
Dressing/Grooming	4	9	2
Bathing/Toileting	2	13	0
Mobility Devices	3	12	0

Table 18

Discharge Location—Retirement Home

	Functional Improvement		
Activities of Daily Living	Yes	No	Deteriorated
Difficulty Transferring between Surfaces	1	1	0
Ability with Feeding	0	1	1
Dressing/Grooming	1	1	0
Bathing/Toileting	2	0	0
Mobility Devices	0	2	0

Table 19

Discharge Location—Inpatient Acute Care

	Functional Improvement		
Activities of Daily Living	Yes	No	Deteriorated
Difficulty Transferring between Surfaces	1	14	4
Ability with Feeding	3	14	2
Dressing/Grooming	0	16	3
Bathing/Toileting	1	14	4
Mobility Devices	2	17	0

Table 20

Discharge Location—Deceased

	Functional Improvement		
Activities of Daily Living	Yes	No	Deteriorated
Difficulty Transferring between Surfaces	9	1	0
Ability with Feeding	10	0	0
Dressing/Grooming	10	0	0
Bathing/Toileting	10	0	0
Mobility Devices	0	10	0

Summary of Major Findings

Overall, this study was effective in answering the four previously stated research questions. Figure 16 provides an illustrated summary of the study's findings along with specific admission and discharge characteristics found in each period. Overall, there was an improvement of 10.4% in the patients admitted with mobility devices. It is also interesting to note that fewer than half of the patients who improved had a length of stay longer than the standard 90 days.

The study did, however, reveal some interdependence between the length of stay and ADL functions but this was not a significant factor for improvement. The overall examination of the ADL functions did not reflect an effective measure of a patient's improvement in their level of care, examination of individual functions was preferred. Additionally, 25% of patients showed improvements in some areas of ADL functionalities as well as mobility devices.

Most of the study's sample (n=129, 89.6 %) were not anticipated to return to the facility once discharged. The data also showed that almost half of the study's population (n=69, 47.9%) were discharged to home care services and 23 patients (16.0%) were discharged to homes where they would have more independent level of care with services to meet their current needs. The overall self-sufficiency was relatively unchanged. However, in period one, there was a greater rate of improvement than in period two. In period two, the rate of deterioration in a patient's self-sufficiency was much greater than in period one. Additionally, progress was slow for frailer patients seen in period one and for patients who lacked muscle strength or motivation. As a result, some remained in the

program for over a year, explaining why the LOS in period one was approximately 50% more than those in period two.

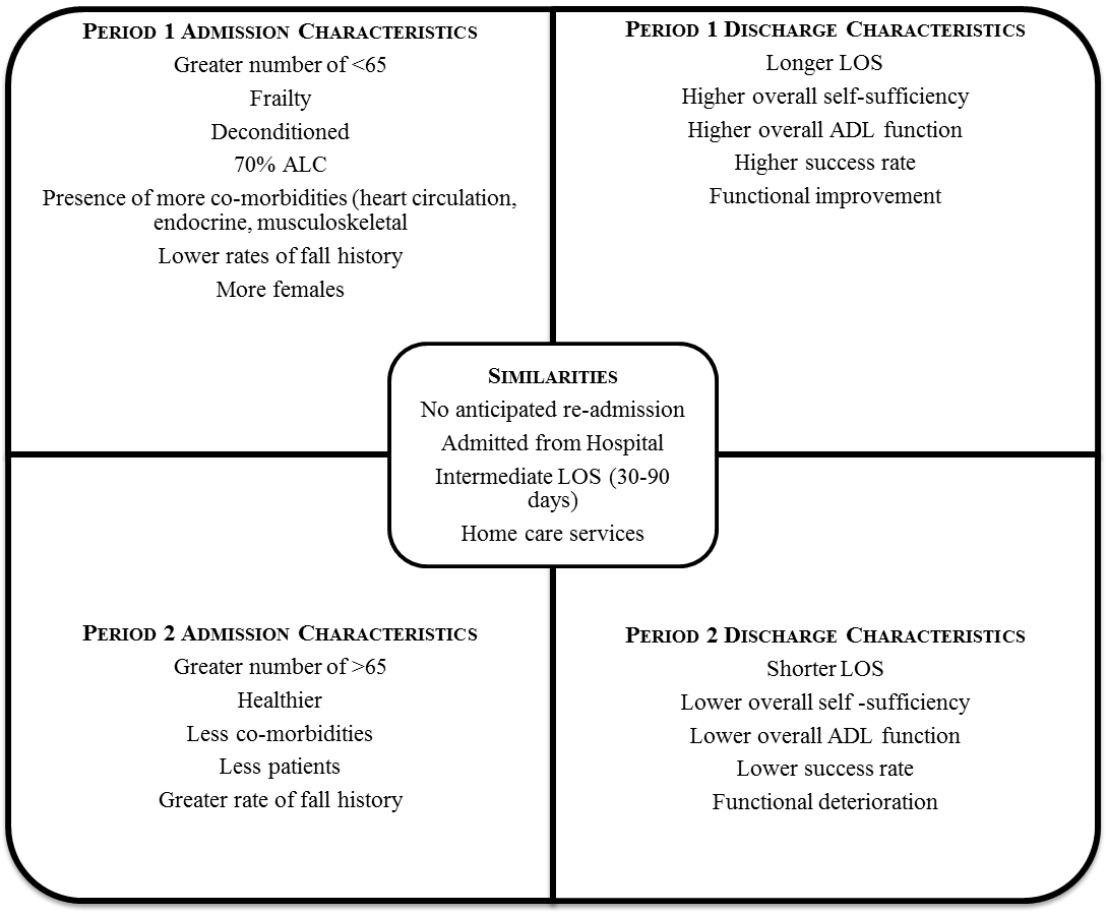


Figure 16. Summary of Findings.

Chapter 5: DISCUSSION

The study provided information about the profile of the patients who were discharged from the ARU program at SJCCC. Descriptions of the program and study population resulted in interesting trends, which could have influenced each patient's functional independence and recovery as well as his or her rehabilitation outcomes. Understanding variable indicators that may have an influence on an individual's health trajectory is necessary for identifying and ultimately meeting the individual's appropriate health care needs.

End of Care Status and Self-Sufficiency

Of great interest to this study was determining whether the older adults discharged from this program had experienced any functional and mobility improvements. It was anticipated that the majority of deconditioned older adults would have significant improvements in their functional status. The result would be that such patients would have great potential to be discharged to a home environment instead of other care institutions.

The initial evaluation of each patient required setting goals for restoration of mobility and functions needed to complete ADLs, which included caring for self (for example, grooming, bathing, dressing, feeding, toileting). The rehabilitation team determined which activities that would be most beneficial in improving a patient's independence and quality of life. Findings from this study highlight the importance that, when dealing with such a vulnerable aging population that have gone through the health care trajectory, any improvement (no matter how small) or maintenance of current status is to be appreciated. The results of the study revealed that there was some improvement

in functional ability with respect to individual patient ADLs (bathing/toileting, dressing/grooming, feeding and transferring between surfaces.) Results from the study also raised an issue concerning potential subgroups in the ARU population. It was found that because the program eligibility criteria changed within 2 years of installment, this change might have influenced the results of care functional status. Those discharged in period one experienced a slightly greater rate of improvement in their ADL functionality and dependency on mobility devices upon discharge. Progress was slow for frailer patients seen in period one and for patients who lack muscle strength or motivation and as a result, some remained in the program for over a year hence why the LOS in period one was approximately 50% more than those in period two. Reason for this is that patients were more frail and dependent with a declining health status on admission in period one as opposed to those in period two.

Rehabilitation, in the context of this study, primarily seeks to facilitate recovery from loss of ADL function. ADL includes self-management activities that are integral to self-sufficiency for the reason that they are critical to an individual's ability to live independently. Loss of function in one or more of these ADLs results in a loss or decreased self-sufficiency. Self-sufficiency of older adults is necessary to avoid dependence especially after their stay in a rehabilitative program such as ARU. A major criterion that the ARU program has put forth since the inception of the program is that the patients are discharged within 90 days. The standard benchmark of 90 days is set by MOHLTC because patient assessments are done on a quarterly basis. During this time, health care professionals will be able to observe, record, and take action on changes in the patients' health, ADL, medication and other health needs. It is anticipated that during

their stay, their overall self-sufficiency and ADL functionality will improve greatly indicating improved mobility and ultimately quality of life. Remaining self-sufficient requires the use of physical activity and adequate mobility within an environment. The ARU program has skilled professionals who worked with each patient who through either injury or disease have lost the ability to perform ADLs and have ultimately lost their self-sufficiency to regain their self-maintenance activities. Improvement in ADL functioning and mobility indicated that the patient was successful in regaining a lower level of care and sufficiency in a particular ADL domain. The ability to leave a hospital sooner is usually an indicator of recovering better and faster. Therefore, prolonged hospitalization of patients as seen in period one is an indication that there was ample time to develop deconditioning or weaknesses, perhaps due to severity of the initial illnesses, co-morbid illnesses, and loss of functional mobility. The study results indicated that mobility, independence, and improved ADL functions on discharge were not significantly different from their status at admission. However, the areas of greatest functional improvement included mobility transfer between surfaces and bathing/toileting care.

Health Status, Co-Morbidity and Falls

Healthcare needs are generally more diverse and more complex in older adults than the rest of the population. The demographic shift to an older population in Canada will mean that the number of older adults affected by chronic conditions and functional limitations will likely grow, even if the proportion of older adults affected remains the same (Canadian Institute for Health Information, 2011). Presently, older adults are living longer with improved health and functional capacity than in previous generations (Sinha, 2012). Additionally, the number of chronic conditions determines the level and quantity

of resources. The previously identified ALC patients in period one had already experienced prolonged hospitalization, which infers deconditioning effects. However, in this study, frailty did not necessarily suggest that the patients were disabled because of the presence of co-morbid ailments. The different co-morbidities and medical history of each patient confers specific care needs of the older adult. Therefore, their health status on intake and during the program necessitates adequate coordination of care among multiple providers and services.

Although the ARU program had a target length of stay (LOS) of 90 days, some patients were not admitted into the program if the goals did not appear to meet the designated period. The complexity of the patient's care, such as the severity of the dependency, comorbidities, and complications affected the length of stay. Moreover, some patients remained in the program for additional time, rather than being discharged to acute care especially if the interdisciplinary team determined that a longer stay and further rehabilitation would result in a better outcome for the patient. This is evident in period one, where the LOS was much longer (one particular patient stayed for over a year). Longer stay patients are found in period one, where the LOS was much longer to the extent that some patients stayed for over a year. Moreover, in many cases in this study, patients in period one also experienced health decline due to complications of clinical interactions between conditions as well as meeting their rehabilitative needs resulting resulted in a much longer stay than the required 90-day maximum.

Falls and co-morbid conditions may threaten the health and independence of older adults and limit their ability to remain self-sufficient. During the older stages in life, the tendency to experience falls that result in hospitalization increases and ultimately

demands more services from the Assess-Restore program. Nevertheless, such program should avoid strict criteria as observed in period two, whereby the eligibility criteria admitted less frail and more agile patients. However, as a whole (2009-2012) the average age of the study's population was approximately 74. This study also confirms generalized views that future falls are inevitable for those with a history of previous falls. The results show a moderate but yet substantial relationship between fall history within the patient's last six months and the reason for hospital admission. The risk factors for falls vary by age group and consist of both modifiable (lifestyle, environment, medication) and non-modifiable (age, gender, health history) factors. Older adults, who are already at a higher risk of falling than other age groups, cannot do anything to change their aging status, but they can work to modify their environment and alter their lifestyle by, for example, installing sturdy handrails and exercising regularly.

Comorbidity heightens the risk of disability and dependency, particularly where patients experience up to five comorbidities (Fried et al, 2001). Some pairs of disorders or diseases could be synergistic in increasing risk for disability and difficulty in one or more ADLs. For example, the concurrent presence of congestive heart failure (heart/circulation co-morbidity) and osteoarthritis (musculoskeletal comorbidity) of the knee could increase the risk of developing a mobility disability whereby the individual has to be reliant on a wheelchair movement. The study found that some patients were at risk because their disorders induced negative reactions to some medications. Given that the relationship between psychotropic medication and falls does not necessarily indicate a causal link, it is noteworthy that the disease and condition of the ARU patients, and not the medication, may be the element that triggers falls during the program.

Several factors are associated with falls amongst older adults, such as age-related frailty, immobility, reduced functional capacity, socioeconomic status, limited health, and inadequate social services (Elliott, Scott, & Wagar,2010). As people age, they start to show higher incidence of disease and greater medication use along with lower levels of physical activity, and physiological changes, such as reduced vision, decreased bone density, and hearing. Consequently, these preceding factors may begin to alter postural stability and increase the risk of falls. Neurodegenerative disorders (e.g., dementia, stroke, and Parkinson's disease) and chronic diseases such as osteoporosis and arthritis are causes of increased frailty and physical impairment amongst older adults. Unless there are improvements in muscle strength, balance, gait, and coordination, such patients admitted to hospitals for falls will still be at risk for falling in the future, thereby inducing a downward cascade of events where the individual becomes immobile, socially isolated, and dependent as described in Chapter 1 and in Figure 3.

Transitions and Continuity of Care

Older adults value their independence and generally prefer living in their personal residences for as long as possible even though, for some, there might be a few challenges to overcome. Older adults need to be able to live at home longer, in an effort to promote independence and maintaining their self-sufficiency with comfort. The ultimate goal at completion of the ARU rehabilitation program is the patient's return to living in a chosen community setting such as at home, with family, receiving home care services, or living in an assisted-living residence. Inpatient acute care facilities do not meet this need and unfortunately, there are insufficient outpatient facilities in northeastern Ontario to meet this demand for the growing older adult population (Cott et al, 2006). The present study,

however, found that the majority of patients went home despite insignificant improvements in the overall ADL functional status when compared to admission. No patients were discharged to a long-term care facility as this a less favourable choice of discharge. Although some patients may have required a slower course of therapy due to chronic comorbid illness, the ARU program succeeded in preventing further functional decline by discharging patients to LTCH.

Most patients discharged to home care services had visitation services scheduled by CCAC in the form of nurses, physiotherapists, and occupational therapists. The occupational therapist provides the vital service of promoting optimal functioning within the patient's chosen discharge environment and ensuring such an environment will meet the discharge recommendations. Depending on patient specific goals, input from various other allied health professions could appropriately include dieticians, social workers, and personal support workers which will enhance their independence in the community and reduces delays residential care admission and/or readmission to SJCCC.

Premature discharge or discharge to an environment that is not capable of meeting the patient's medical needs may result in hospital re-admission. In most cases, when a patient is medically ready for discharge, the health care team determined the most appropriate setting based on the medical, functional, and social aspects of the patient's end of care status. The patient's acute and chronic medical conditions, potential for rehabilitation and decision-making capacity are also taken into account. Once a patient is discharged from the ARU program, an assessment is made to determine the likelihood of the patient returning to SJCCC. In this study, re-admissions represented a progression in the natural history of the patient's underlying disease, a separate problem that is unrelated

to the initial admission, or the consequence of patient inability to follow through with a discharge plan and lack of continuity of care.

The continuum of care has become increasingly complex, ranging from high-cost and high-intensity care in acute care hospitals to lower levels of care in outpatient settings. The demographics of an aging population mean an increasing prevalence of chronic health conditions, requiring a rational system for linking assessments of patients from the acute care hospital to the rehabilitation program, as well as to outpatient and home-based programs. Assessment of patients across the continuum of care should be understandable, meaningful, cost-effective, and manageable. In order to render the most effective care, a method for anticipating probable resource needs and outcomes would be helpful at the time of admission, and after rehabilitation.

Continuity of care during transitions is important in maintaining the health of older adults. The patient's integration in the environment is not static but a dynamic process of continuous adaptation involving varying resources. These resources include personal types such as education, financial and social resources, social network, cohesion, knowledge transfer, and recreation. A transition, with respect to this study, is a discrete life change or event within a trajectory (e.g., from a single to married state), and a trajectory is a sequence of linked states within a conceptually defined range of behavior or experience (e.g., education and occupational career) (Elder, 1998). According to Meleis transition theory, the lack of preparedness, education, and exchange of information for patients and caregivers is disconcerting because they are the only source of continuity throughout the care transitions.

Future studies should explore the benefits of home care that will facilitate a successful transition from one level of care to the next and the same time, embrace all aspects of the continuum of care.

Limitations

Medical records may contain important clinical and personal information that are not primarily for research purposes, and may not guarantee a result representative of the general population. Moreover, some records may have no specific issues but may provide answers to questions about the history of the patients, which makes it challenging to validate the findings without the inclusion of direct participation, as well as, the contemplation for additional studies.

When carrying out this study, there was an assumption of complete accuracy in the recorded information. However, this assumption implies that the physician and all other health professionals involved have correctly recorded the clinical information relating to the patient's care. Despite the use of a computerized standardized method for the recording of clinical information (PointClickCare), there is the potential for some human error in the process of transcribing the individual patient data from the chart to the database. Although this study enables the researcher to identify such errors, the limitations will prevail but the onus is on the researcher to represent the recorded information in a logical perspective without compromising the integrity of the record. While there are limitations to a retrospective chart review approach, it generates potentially useful hypotheses and identifiable patterns for further studies or actions.

Recommendations for Implementation and Sustainment

Disseminating knowledge is essential in terms of identifying stakeholders, building networks and relationships, and designing intervention strategies (Clark & Kelly, 2005). Knowledge mobilization and dissemination can serve as the vital link between the research and social community, which can be of great value to the people affected. The challenge with knowledge mobilization is the facilitation and transformation of knowledge from empirical evidence to action (Bennet & Bennet, 2004). It is for this reason that there lies an extreme need to enhance the level of knowledge across all stakeholders of the available options in the continuum of care.

For knowledge mobilization to be highly successful, all stakeholders must be able to communicate effectively and to work together as a team with a positive chemistry among them that encourages and reinforces their capacity to learn from each other and identify alternative solutions in the best interest of the patients exiting the SJCCC Assess-Restore program. Many changes to the way society currently responds to older adults within the community will be necessary to pave the way for the incoming population. The majority of these changes have to deal with the delivery of health services and health care providers themselves as there will be an increased demand on the health care system resulting in society being poised and ready to provide healthcare services rather than opting for institutionalization.

Rehabilitating patients to a lower level of care where they can practice their independence can prove to be difficult in the presence of insufficient support services, accessibility of primary care along with the shortage of community, rehabilitation, and long-term care resources for individuals who no longer need to remain in hospital. This

situation will intensify due to the scarcity of rehabilitation and assessment beds. Resolving this problem is essential to help older adults transition back into the community in a timely fashion and minimize the detrimental effects of functional decline. The focus should be on effective and efficient rehabilitation and increased community supports for realistic, preferred, and logical alternatives to acute care hospitals. Older adults in northeastern Ontario are a diverse population who may require multiple service providers and a supportive foundation of caregivers. In order to promote quality of life and functional ability within this population, the health care system must redefine itself around the needs of the client rather than making clients fit the system. The intersection of community care, acute care, rehabilitation care and long-term care is at the root of the solution for this population now and in the future. For results to be effective and enduring, they will have to include participation from a variety of sectors, ranging from primary care to community care, acute care, long-term care, and palliative care.

In order for older adults to retain their health and independence in the community, there must be a continuous effort to develop affordable supportive housing for older adults and simplify access to services and resources by increasing the quality of information available to citizens. In a system as complex as health care, change will not take place overnight. However, by shifting the focus to preventative care and sharing responsibility between hospitals and the community, we can reduce the strain on the acute care system and improve the quality of care for the community at large, and more specifically, for the growing population of older adults.

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Conclusion

As Ontario's aging population increases, there will be a significant need for services to sustain quality of living and extending the independence of older adults. Older adults are living longer and as such, there will be a real need to help and support more of our older population with quality services that they can depend upon. The proportion of persons with health limitations and disabilities in the northeastern Ontario population is increasing with age. Measures aimed to improve the mobility of persons with disabilities should simultaneously address the limitations and needs of older adults. It is crucial that the solutions aimed to remove the barriers are consistent with the needs of persons with various disabilities.

Rehabilitation, in the context of this study, encompasses a wide range of activities in addition to standard medical care such as, physical, cognitive, and occupational therapy. The ultimate goal of rehabilitation in the context of the ARU program is to restore the individual to a reasonable degree of functioning. Thus, rehabilitation at SJCCC and time spent working on ADL functionality is associated with anticipated improved functional outcomes.

Patients in period one had a slight advantage because they displayed greater improvement in comparison to patients in period two. The change in ARU eligibility played a role in this difference of success rate. Younger and frailer participants experienced the positive effects of rehabilitation when compared to their older and healthier counterparts. Although the study did not find significant changes in the level of functionality and self-sufficiency within the study population at SJCCC's ARU program, it succeeded in effectively illustrating how the ARU program provided rehabilitation

services rather than risking further functional deterioration. Further to that, the program promoted functional restoration, which allowed majority of the patients to return a level of independence in the community and avert subsequent need for residential care.

Comprehensive knowledge transfer among health care professionals across disciplines and sectors of the health system is necessary to share knowledge regarding care pathways for communities in rural and northern Ontario. Transitions from one care setting to another are likely to mirror changes in the patient's functional status, ability for self-care, and health. These care transitions often accompany a new diagnosis or a change in medication regimen, however; the transition itself also introduces risk for the patient in terms of both patient safety and care quality. A poor transition can lead to medication errors, a return to a higher-intensity health care setting, increased use of acute care resources, and re-hospitalization.

The rising number of older adults with specific health needs requires adapting health services to this situation, ensuring the availability of geriatric care, physiotherapy, and on-going support for healthy life. Maintaining the independence and quality of life for older adults is of a main priority to the Canadian health care system. Because older adults often live with some form of disease, strategies should be implemented (in all levels of care) that help to create environments that favour the health and safety of these individuals. The preceding calls attention to the need for investment of comprehensive and inclusive approaches in rehabilitating older adults and creating a social culture that facilitates and encourages good health management, social networking, and active living.

Although the study found the program somewhat effective in reducing functional decline, regaining patients' strength, independence, and restoration of the level of

functioning, it does not outline what happens to the patient when discharged home. Consideration has to be given to the transition process. Was the transition process successful in tailoring to the needs of the individual, inclusive of family, appropriately times and collaborative in nature? This poses a possible question for further research. Future studies should embrace efforts to prevent disability such as research assessing the predictors of functional recovery, the relationship between hospital processes of care and recovery, and the effectiveness of rehabilitative interventions. Accordingly, this study creates a baseline for the examination of post-discharge experiences, the pathway for further research, and it offers valuable feedback to administrators with respect to the potential impact of the Assess-Restore program for those patients transitioned from acute care.

Preventive and rehabilitative interventions are particularly important in addressing the health care needs of older adults. Hospitalization and bed rest are likely lead to enforced immobilization, accelerated bone loss, decline in muscle strength and aerobic capacity and ultimately, functional decline. Without swift and appropriate clinical interventions, the general functional ability of older patients can decline rapidly. The repercussions can be costly for hospitals. The expense of avoidable complications associated with hospital care, prolonged lengths of stay, and access and flow issues in the system due to bed shortages creates tremendous pressures for hospital personnel and community support services. Patients are at risk of recurrent admissions, premature admission to long-term care facilities and loss of independence. However, with the reshaping of domestic and international markets, rural and northern communities are in a position where they must quickly adapt to the economic and social changes in a rapidly

changing world. A shift is required in the current health care system so that all of the health services providers that a patient will encounter at the time of admission for an acute care episode make it their priority to support that patient to go home on discharge.

The aim of health policy and health care in the context of population ageing is to extend healthy life span and reduce incidence of serious disabilities and loss of self-sufficiency. For these purposes, it is necessary to reduce the prevalence, incidence and consequences of chronic diseases and other factors leading to decrease in functional status and self-sufficiency.

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Appendix A
Data Abstraction Tool

Reference Manual

DATA ABSTRACTION TOOL - Reference Manual		
Variables/Codes	Code Key	Multiple Code Key
Subject Code: 001 to 144 Period: 2009-2010 (1); 2011-2012 (2) Gender: Male or Female Study Period: 2009-2010 or 2011-2012 Entry Date: DD-MM-YY Discharge Date: DD-MM-YY		
PTA - Demographics		
Admission from location	Select 1-6	
Private Home (HHS)	1	
Private Home (no HHS)	2	
Acute Care Hospital	3	
Assisted Living	4	
Long Term Care	5	
Other	6	
Prior admission to SJCCC	Select 1-2	
Yes	1	
No	2	
Marital Status	Select 1-6	
Married	1	
Never Married	2	
Widowed	3	
Separated	4	
Divorced	5	
Unknown	6	
Reason for Hospital Admission	Select 1-3	
Fall	1	
Other Illness	2	
N/A	3	
Responsibility/Legal Guardian		
Patient Responsible	1	1
Power of Attorney	2	1
Family Member	3	1
Other	4	1
Unknown	5	1

DATA ABSTRACTION TOOL - Reference Manual		
Variables/Codes	Code Key	Multiple Code Key
PTA - Utilization		
Hospital stays within last 90 days	Select 1-3	
Zero	1	
Less than 2	2	
More than 2	3	
Fall history within last six months	Select 1-3	
No History	1	
1-2 times	2	
Multiple times	3	
Use of Antipsychotic Medication	Select 1-3	
Yes	1	
No	2	
N/A	3	
Co-morbidities		
Endocrine/Metabolic	1	1
Heart/Circulation	2	1
Musculoskeletal	3	1
Neurological	4	1
Psychiatric/ Mood	5	1
Pulmonary	6	1
Sensory	7	1
Other	8	1
None	9	1
History of cognitive deficiencies	Select 1-3	
Yes	1	
No	2	
Unknown	3	
PTA - Mobility and ADL		
Difficulty transferring between surfaces	Select 1-5	
Independent	1	
Supervision	2	
Limited Assistance	3	
Extensive Assistance	4	
Total Dependence	5	
Ability with Feeding	Select 1-5	
Independent	1	
Supervision	2	
Limited Assistance	3	
Extensive Assistance	4	

DATA ABSTRACTION TOOL - Reference Manual		
Variables/Codes	Code Key	Multiple Code Key
Total Dependence	5	
Dressing/Grooming	Select 1-5	
Independent	1	
Supervision	2	
Limited Assistance	3	
Extensive Assistance	4	
Total Dependence	5	
Bathing/Toileting	Select 1-5	
Independent	1	
Supervision	2	
Limited Assistance	3	
Extensive Assistance	4	
Total Dependence	5	
Mobility aid	Select 1-3	
Yes	1	
No	2	
Unknown or N/A	3	
Mobility devices (if yes)		
Wheelchair	1	1
Wheeled Walker	2	1
Cane	3	1
N/A	4	1
DISCHARGE RECOMMENDATIONS - Demographics		
Discharge facility/level of care	Select 1-9	
Home with support care	1	
Home without support care	2	
Inpatient Acute care	3	
Long term care	4	
Retirement home	5	
Rehabilitation facility	6	
Residential care services	7	
Home care services	8	
Deceased	9	
Return anticipated	Select 1-3	
Yes	1	
No	2	
N/A	3	
Residents preference to re-enter	Select 1-3	

DATA ABSTRACTION TOOL - Reference Manual		
Variables/Codes	Code Key	Multiple Code Key
community		
Yes	1	
No	2	
N/A	3	
Resident has support person post-discharge	Select 1-3	
Yes	1	
No	2	
N/A	3	
Residents overall self-sufficiency/level of care as compared to admission	Select 1-4	
No Change	1	
Improved	2	
Deteriorated	3	
N/A	4	
Residents overall ADL function as compared to admission	Select 1-4	
No Change	1	
Improved	2	
Deteriorated	3	
N/A	4	
Stay projected to be of short duration discharge projected within 90 days (excluding expected discharge due to death)	Select 1-4	
No	1	
Within 30 days	2	
Within 31-90 days	3	
Discharge uncertain	4	
Participation in discharge		
Resident	1	1
Family	2	1
Spouse	3	1
Resident only	4	1
N/A	5	1
Obese	Select 1-3	
Yes	1	
No	2	
Unknown or N/A	3	
DISCHARGE RECOMMENDATIONS - Utilization		

DATA ABSTRACTION TOOL - Reference Manual		
Variables/Codes	Code Key	Multiple Code Key
Professional care involved with case		
Physiotherapist	1	1
Occupational Therapist	2	1
Registered Nurse	3	1
Physician	4	1
Dietician	5	1
Other	6	1
Fall history during program stay	Select 1-4	
No History	1	
1-2 times	2	
Multiple times	3	
N/A	4	
DISCHARGE RECOMMENDATIONS - Mobility and ADL		
Difficulty transferring between surfaces	Select 1-6	
Independent	1	
Supervision	2	
Limited Assistance	3	
Extensive Assistance	4	
Total Dependence	5	
N/A	6	
Ability with Feeding	Select 1-6	
Independent	1	
Supervision	2	
Limited Assistance	3	
Extensive Assistance	4	
Total Dependence	5	
N/A	6	
Dressing/Grooming	Select 1-6	
Independent	1	
Supervision	2	
Limited Assistance	3	
Extensive Assistance	4	
Total Dependence	5	
N/A	6	
Bathing/Toileting	Select 1-6	
Independent	1	
Supervision	2	
Limited Assistance	3	

DATA ABSTRACTION TOOL - Reference Manual		
Variables/Codes	Code Key	Multiple Code Key
Extensive Assistance	4	
Total Dependence	5	
N/A	6	
Mobility aid	Select 1-3	
Yes	1	
No	2	
N/A	3	
Mobility devices (if yes)		
Wheelchair	1	1
Wheeled Walker	2	1
Cane	3	1
N/A	4	1

Appendix B

Ethics Approval

Health Sciences North and St. Joseph's Continuuing Care Centre Approval

Notification of REB Initial Approval

To:	Victoria John
Study Title:	**Characteristics of the Client-Based Population at St. Joseph's Continuing Care Centre's Assess-Restore Program: A Retrospective Chart Review**
REB Review Type:	Delegated
Date of Review:	August 10, 2012
Expiry Date:	August **10, 2013**

Documents Approved:

Application (August 10, 2012) Proposal
Data Extraction Tool

Documents Acknowledged:

Project Number' 663

The Research Ethics Board of Health Sciences North (HSN REB) has reviewed the above research protocol.

The above Project Identification Number has been assigned to your project. Please use this number on all future correspondence.

If, during the course of the research, there are any serious adverse events, confidentiality concerns, changes in the approved project, or any new information that must be considered with respect to the project, these should be brought to the immediate attention of the REB. The relevant forms may be found on the HSN's intranet site, but may also be obtained from our office upon request in the event that you do not have access to same.

In the event of a privacy breach, you are responsible for reporting the breach to the HSN Privacy Officer,

If the study is expected to continue beyond the expiry date, you are responsible for ensuring the study receives re-approval. The REB must be notified of the completion or termination of this study and a final report provided.
The Board wishes you good luck with
your study, Sincerely,

Dr. Martin Martin Shine, Chair, Health Sciences North Research Ethics Board

LUREB Approval

APPROVAL FOR CONDUCTING RESEARCH INVOLVING HUMAN SUBJECTS
Research Ethics Board – Laurentian University

This letter confirms that the research project identified below has successfully passed the ethics review by the Laurentian University Research Ethics Board (REB). Your ethics approval date, other milestone dates, and any special conditions for your project are indicated below.

TYPE OF APPROVAL / New X / Modifications to project / Time extension	
Name of Principal Investigator and school/department	Victoria John
Title of Project	*Characteristics of the Client-Based Population at St. Josephs Continuing Care Centre's Assess-Restore Program: A Retrospective Chart Review*
REB file number	2012-07-04
Date of original approval of project	July 27, 2012
Date of approval of project modifications or extension *(if applicable)*	
Final/Interim report due on	July 27, 2013
Conditions placed on project	Final report due on July 27, 2013

During the course of your research, no deviations from, or changes to, the protocol, recruitment or consent forms may be initiated without prior written approval from the REB. If you wish to modify your research project, please refer to the Research Ethics website to complete the appropriate REB form.

All projects must submit a report to REB at least once per year. If involvement with human participants continues for longer than one year (e.g. you have not completed the objectives of the study and have not yet terminated contact with the participants, except for feedback of final results to participants), you must request an extension using the appropriate REB form.

In all cases, please ensure that your research complies with Tri-Council Policy Statement (TCPS). Also, please quote your REB file number on all future correspondence with the REB office.

Congratulations and best of luck in conducting your research.

Susan James

Susan James, Acting chair
Laurentian University Research Ethics Board